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ABSTRACT

Five articles on research and development in higher education and three review articles are presented. Titles and authors are as follows: "Students' Assessments of Instruction as a Basis for Teaching Improvement and Promotions Decisions: A Case-Study" (John Jones); "The Making of Academic Promotion Decisions: Criteria and Processes" (A. J. Lonsdale); "Some Characteristics and Attitudes of Academics in Australian Universities and Colleges of Advanced Education" (John A. Bowden and John Anwyl); "A Review of Research on Lecturing" (M. J. Dunkin); and "Introducing Explicit Training in Problem Solving into our Courses" (Donald R. Woods). Titles and authors of review articles are as follows: "General Education in the University" (Robert Waddell); "Distance Learning in Higher Education" (Patrick Guiton); and "Understanding Learning" (Paul Ramsden). The review article on distance education covers four books, while each of the other review articles covers one book. (SW)

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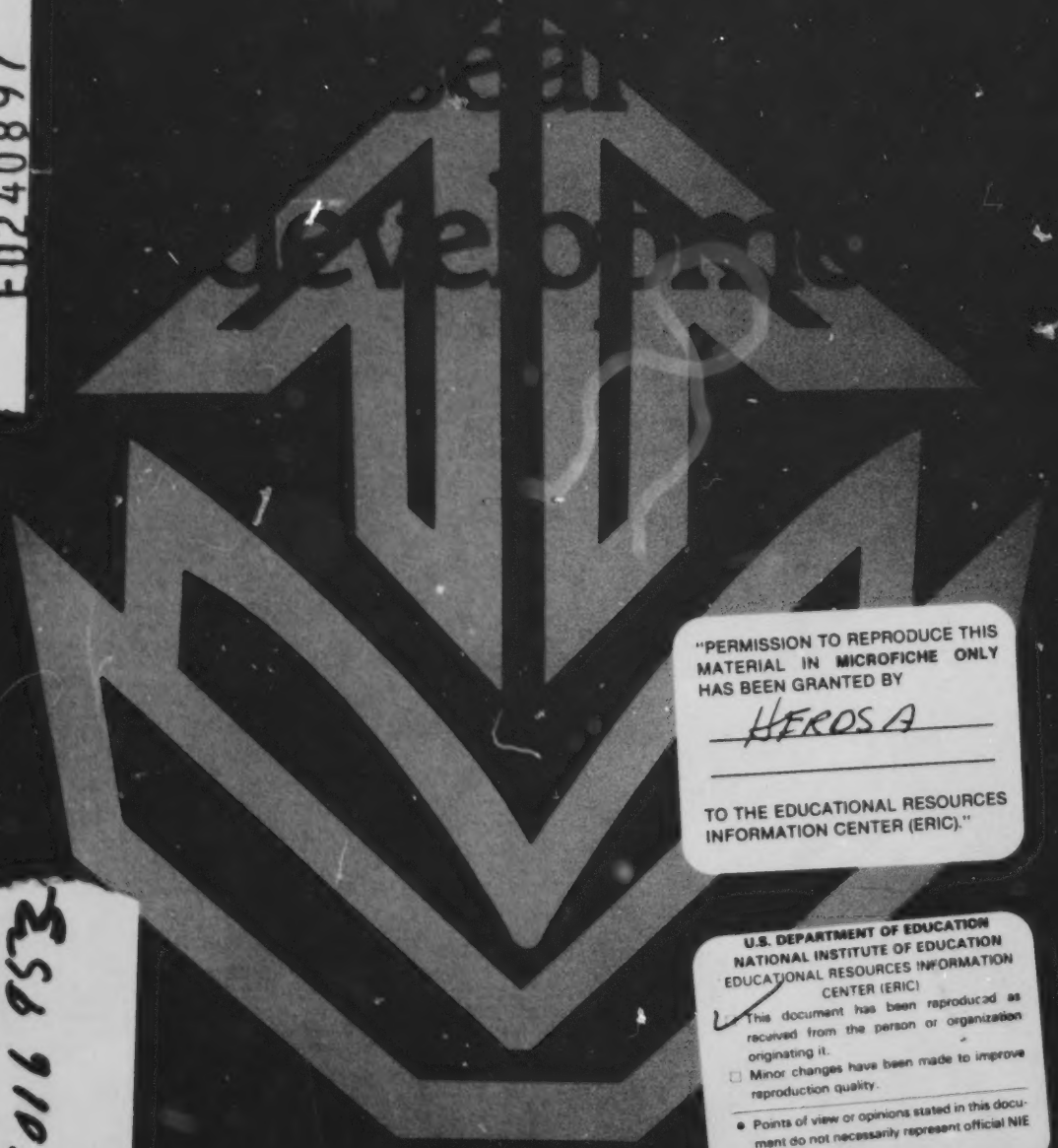

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Editorial

Following the publication of the first issue we undertook a thorough review of the design of the journal in the light of research into factors which make the reader's task both easier and more enjoyable. As a result of this review the requirements for the preparation of camera-ready copy have been considerably revised and readers should notice an improvement in the appearance of this issue compared with the previous two. The slight increase in the print size will mean some reduction in the amount of material which we can publish each year.

The printing industry is in a state of flux because of the introduction of new technologies. It seems likely that in two or three years from now it will be possible for authors to prepare their copy on word-processor tapes which can be fed directly into a printing machine. This will speed up production and, we hope, further reduce costs.

Editors and authors are heavily dependent upon the willingness of referees to give their time to the task of selecting and improving papers. It is clearly of great value to authors to be able to revise their work with the aid of detailed comments from referees. Unfortunately, it is still quite rare for students to be given this opportunity. Although we acknowledge the important contribution made by referees by listing their names at the front of the journal, this is not an adequate recognition of the part which many have played in creating the final version of a paper. Would it not be a good idea, with the agreement of all parties, for the names of referees to be given at the end of published papers?

As a youthful editor, at least in experience, we have been surprised at the quality of a few of the papers which have been submitted. The lack of clarity, poor organisation, and abundance of typing errors sometimes conveys the impression of a hasty first draft which has been mailed without re-reading in the quite unreasonable expectation that the editor and referees will undertake a major re-write on behalf of the author. We are critical of students who fail to check their work yet are sometimes guilty of the same failing. A recent book contained the following prefatory note: "This edition is the same as the previous edition except that the opportunity has been taken to correct a number of misprunts."

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Students' Assessments of Instruction as a Basis for Teaching Improvement and Promotions Decisions: A Case-Study

John Jones
University of Auckland

ABSTRACT
As part of an investigation of ways in which systematic evaluation of instruction might be implemented, teaching evaluations were carried out in a pre-clinical medical department. The basis of the assessment was student feedback via questionnaire forms. Each form contained a common core of global items, aimed primarily at providing quantitative evidence relating to quality of teaching, and "tailor-made" items aimed at the improvement of teaching. The results of the evaluations are discussed in terms of the reliability and validity of the procedures. Staff attitudes to the exercise are also discussed, as are modifications to procedures which have been made based on staff and student opinion.

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INTRODUCTION

The literature relating to student assessment of teaching and courses is copious, but a brief search through any representative sample (e.g. Flood Page (1974), Goldschmid (1978), Perlberg (1979), Murray (1980)) indicates that such assessment is usually proposed or justified on one of four grounds.

(a) Efficiency and effectiveness - for the purpose of improving teaching.
(b) Administrative decisions relating to promotion and appointment.
(c) Providing information to help students select courses.
(d) Accountability - to profession and public.

In practice though, it is the first two of these - the formative and summative functions respectively - which are uppermost in the minds of those engaged in evaluation exercises. This was the case in the work which is to be described here.

For a number of years now a Teaching Methods Committee has been in existence at the Medical School at the University of Auckland. Broadly, the committee aims to stimulate and support more effective teaching within the Medical School, and as part of this role it has been investigating means via which systematic teaching assessment might be introduced. This assessment was seen to be necessary for the two main reasons given above - first, the improvement of teaching and second, to provide a source of information for use in promotions decisions.

During 1980, a good deal of time was spent in considering the principles and practices which should underlie a system of teaching assessment. The following statement by Francis (1975) seemed to make good general sense.

> If run by administrators, these early projects (concerned with teaching evaluation) should be voluntary and confidential, to avoid generating faculty resistance to the entire project for fear that the results will be misused. By far the best approach, however, would be such programs designed and run by faculty, an approach which would engender early legitimacy through faculty 'ownership'. (p. 723)

Accepting the tenor of this statement, three basic guiding principles suggested themselves for any pilot scheme concerned with teaching assessment.

(a) Any work carried out should be a trial, an experiment to determine the usefulness of the procedure.
(b) Staff should be closely involved in the project, from the outset. But much of the administrative burden could be carried by service personnel.
(c) All assessment should be confidential to the staff member concerned, and it is solely the decision of that person whether the results of the assessment are made known to others.

On the basis of the research literature it was accepted that student evaluations of teaching are generally reliable when properly designed and conducted, and are valid in the sense that they assess the most important dimensions of teaching as seen by students. It was decided to use a student questionnaire form as the main element of the assessment procedures, though it was envisaged that colleague assessment might also be used. In designing the form it was recognised that there was a dual function - assessing for improvement of teaching and assessing for promotion - and that 'conflicts of purpose' (Derry, 1979)

might occur. Assessment which is carried out in order to improve teaching can be informal, private and aimed at a specific context; assessment for the purposes of promotion has to be formal, systematic and co-ordinated across an institution (or administrative units) if it is to be valid. The lecturer who sets out to improve a course can work privately, with procedures tailor-made for a particular situation and no need for compatibility of assessment procedures across courses. But the person whose aim is to demonstrate the relative superiority of his teaching has to make use of assessment instruments which are systematic and public. That is, the procedures have to be public though not necessarily the assessments which each individual obtains, as this would contravene the third principle - of confidentiality - stated previously.

In order to avoid this potential conflict of purposes, the two areas were separated on the assessment form. Each form was divided into two different areas. First, a 'core' was included on all forms, and this was intended to provide assessments which were comparable across teaching contexts, and hence might be used in promotions decisions. Then, there were further sections designed to provide information which was appropriate for improving teaching.

THE TEACHING ASSESSMENT FORM

The Core Questions

These consisted of seven global items which were considered to be characteristic of good teaching in any context. The items were based on a literature survey, local informed opinion and research (Jones, 1981) relating to the characteristics of good teaching: they are as follows.

(a) The instructor seems to have a complete command of his subject matter, and to be familiar with recent developments in the area.
(b) The instructor communicates clearly and intelligibly with students, using appropriate vocabulary. Audio-visual aids (blackboard, OHP, etc.) are used skilfully and appropriately.
(c) The instructor is enthusiastic about his subject and transmits this enthusiasm to the students.
(d) The instructor is adept at explaining concepts, and relates pieces of knowledge to each other in a way which makes the subject meaningful for students.
(e) Each class session is well-structured. Activities are appropriate for the aims of the teaching; different sections are meaningfully related to each other and to the rest of the course.
(f) Students find the instructor's classes interesting, and are stimulated to think and talk about the subject, and to enquire further into it for themselves.
(g) The instructor is concerned about students' academic welfare, and cares that they come to understand the material and perform well in examinations.

In each case, students were asked to rate teachers on the following seven-point scale suggested by Murray (1980).

1	2	3	4	5	6	7
very	poor	below average	average	above average	very good	outstanding
(among the worst teachers experienced)						(among the best teachers experienced)

The aim of these items was to provide normative information for teachers which would indicate where they stood in relation to their peers. This could be of obvious value in promotions decisions. While there is also some potential diagnostic use asssociated with these items, their main purpose was intended to be summative.

Situational variables relating to students' perceptions of the relevance and difficulty of subject matter have been reported to affect ratings of teaching, though research results are far from consistent (see e.g. Costin et al. 1971). In an attempt to take account of this factor, the form contained an introductory section in which students were asked to provide ratings on a seven-point scale on the perceived relevance of the material and how hard they were working outside class. Students were also asked to nominate the grade which they were intending for the particular course.

Often a lecturer is required to teach 'unpopular' subject matter, and the intention was that eventually norms would be built up in terms of students' ratings of the relevance of material. During the study though it turned out that students experienced difficulties in responding to these questions; these difficulties are described later, together with an alternative strategy which has been adopted.

After the seven global items listed previously were three open-ended questions in which students were invited to write what they liked best about the instructor's teaching, least about the instructor's teaching, and finally were asked about ways in which the instructor's teaching could best be improved. These open-ended questions were included on all forms and were intended solely as formative items, for the improvement of teaching. It would be difficult to make an objective comparison of teaching quality on the basis of this open-ended feedback.

A final section on the assessment form also aimed to elicit information which would be useful in improving teaching. It contained items which were tailor-made for the particular teacher and course. Again, it is not very feasible to make any comparative analysis of teaching quality on the basis of such items. In the first place they may be pertinent only to the particular context for which they were constructed, and secondly they may refer to matters of 'style' which say little about teaching quality, (Scriven, 1981) , though they may provide useful information about the overall coherence of a course.

Students were not asked to attach their names to the forms. A preamble at the head of each form informed students that the teaching assessments would be used in the following two ways.

1. It will provide feedback to the instructor regarding his/her teaching. On the basis of this feedback it may be possible to make changes.
2. It will provide a source of information which could be used in promotion and tenure decisions.

Information which you provide will be strictly confidential to the

instructor (though s/he may use it in a constructive manner, as appropriate).

Students were thus responding in the knowledge that the information might be put to 'feedback' or 'decisional' use - but that it was in any case confidential to the individual lecturer. (See Orpen, (1980) for a discussion of these factors).

TESTING THE ASSESSMENT FORMS

Within the Medical School two departments, one clinical and one pre-clinical, agreed to carry out assessments of teaching. For various logistical and administrative reasons the assessments carried out in the clinical department were less comprehensive. (There was also the problem that some of the seven global items did not apply so well to Ward Teaching, which was an important component of the whole programme. Further developmental work is needed in this area). This being the case, the description and discussion which follows applies to the teaching in one pre-clinical department. Before any assessments commenced, a meeting was held between all of the teaching members of this department and representatives of the Teaching Methods Committee. At this meeting some ground rules relating to procedures, responsibilities, confidentiality, etc., were discussed and a modus operandi was agreed upon.

A questionnaire form consisting of the seven core items together with the section designed for each particular course was produced, after discussion with the staff member concerned. Students completed the questionnaires during a formal teaching period, and a summary of responses was returned to the staff member after analysis. Eleven teaching evaluations were carried out for the seven full-time teaching staff of the department. Four staff participated on two occasions, while the remaining three staff were involved once only.

Following the evaluations a Report on the exercise was produced, and this was subsequently discussed at a series of meetings attended by those who had been involved and other interested staff of the Medical School. The comments and discussion which follow draw upon the data generated during the exercise and the subsequent discussion.

DISCUSSION OF THE TEACHING ASSESSMENT STUDY

The point was made earlier that the assessment was intended to play two rather different (though not mutually-exclusive) roles: improving teaching and providing valid information for promotions decisions. These are considered separately.

Improving Teaching

Opinion within the department varied as to how useful the feedback had been for improving teaching, but everyone agreed that it had been useful up to a point. Some people found the opinions useful for 'the odd comment':

> Individual lectures were very clear for the students, but the overall picture was not.
>
> I no longer talk into the blackboard.

Others, who had opted for a 'tailor-made' section found that the feedback relating to the course was generally quite valuable, and that useful course modifications could be made based on students' suggestions.

In addition to these positive perceptions on the part of teachers, there were also behavioural changes which followed the evaluations. The most striking example of this was the staff member who completely changed his teaching strategy after a first evaluation. Instead of relying on conventional lecture presentations he adopted a class arrangement, set in the laboratory, where students were taught via closed-circuit television. Typically, students were presented with a piece of material, asked to carry out a task based on this, and then presented with feedback relating to the task. On this second occasion student evaluations of the teaching were much more favourable (see Table 1, Staff Member D).

There are problems associated with the open-ended questions which ask for comments about the 'good' and 'bad' aspects of a staff member's teaching. When the feedback is predominantly positive, then a staff member will see the students as supportive, and comments as constructively critical and useful. On the occasions when students are not overly enthusiastic about a particular piece of teaching, then the reverse can occur. A staff member will see the students as negative, and the whole exercise may turn out to be counter-productive. This is particularly the case when students indulge in personal comments, focussing upon the lecturer as a person rather than the technical aspects of the teaching. A very small number of adverse personal comments can completely outweigh the supportive statements and constructively critical comments which the majority of the students make.

In general, students were very responsible in the ways in which they completed the forms, and they were certainly attentive and co-operative. However, given the damaging effects which were associated with a small number of irresponsible personal remarks, it is important to minimise these. Assessment forms have since been modified by omitting the question which asked students what they liked <u>least</u> about an individual's teaching. The two remaining open-ended questions ask what students like <u>best</u>, and for ways in which the teaching might be improved.

The staff who participated were generally positive toward the whole assessment exercise - and have opted to repeat the procedure this year with the modifications which are described throughout this section. Some relevant remarks from the departmental statement are quoted below.

> The results of the teaching evaluations have generated a great deal of useful and continuing discussion between staff members of the Department, which has incidentally resulted in better understanding and communication between us. We have all found that the results provided valuable feedback which has already proven useful in our subsequent teaching. Some of the individual comments under Section 2 of the questionnaire have been particularly valuable in this respect.
>
> In conclusion, we feel that the teaching evaluations have been sufficiently important to warrant continuing them this year. In order to put the

> studies in perspective, we consider it would be extremely useful for other departments to undertake a similar evaluation of their teaching. We should like to commend them as a somewhat painful but extremely useful process.

In their review, Rotem and Glasman (1979) conclude that students' evaluative feedback to university teachers does not seem to be effective for the purpose of improving their teaching performance. There is some evidence though from this exercise that improvement did occur. Certainly, staff made changes to their courses (in terms of content and logistics) on the basis of student feedback. And in at least one case a staff member 'improved' his teaching as judged by the criterion of student evaluation. If teaching is to be improved through student feedback, then possibly both the summative and formative elements are required. Rotem and Glasman (1979) comment that

> Open-ended questions, for example, tend to be less reliable ... but they could prove more effective as feedback because they contain more diagnostic information for the teacher. (p. 507)

In terms of the present case-study this is certainly true in that most of the changes which took place were as a result of open-ended feedback. But, staff were very conscious of their scores on the rating scales, and their positions relative to their colleagues. In at least two cases major re-structuring of teaching was probably stimulated to a large extent by relatively low scores on the rating scales.

A Source of Information for Promotions Decisions

If the teaching assessment questionnaire is to provide a useful source of information for promotions decisions then it needs to be both reliable and valid. It is worth considering each of these requirements briefly.

(a) Reliability

To enhance reliability, it is desirable that there be a spread along the dimension which is used for measurement, for if all people are bunched up close to one point on a scale, then very small and random variations can significantly change rank orders.

A reliable system of assessment yields similar measurement on different occasions. This much is obvious, but very different contexts can affect measurements (e.g. Feldman, 1977). For example a teacher may score well when he teaches via large lectures, but relatively poorly when he takes small groups, and vice-versa. Ideally, one would like an instrument which is independent of context (class size, topic taught, physical teaching environment, etc.) and which consistently produced similar ratings of an instructor's teaching ability. However, a realistic criterion for reliability would be that the instrument produce similar results on similar occasions (with the 'similarity' defined in terms of the particular environmental characteristics which might affect student ratings).

Reliability increases with the number of occasions on which measurements are made. But, this has to be balanced against the fact that students are likely to become rather bored and disgruntled by being asked to

continually complete questionnaire forms.

(b) Validity

There are good grounds for suggesting that the validity of any procedure for assessing teaching quality depends upon the extent to which students say that it is valid (e.g. Jones, 1981). If we accept that the aim of teaching is to help students to learn, then it is only students who can judge the extent to which this has occurred. There are other facets of a course of instruction, such as the quality of the material included, which are best judged by others (Murray, 1980), but teaching as an activity which enhances learning must be a matter for students to judge. Then there is the question of acceptability. If it is to be adopted, a teaching assessment procedure has to be acceptable to the staff members concerned. And this acceptability will be closely geared to the extent to which the objective outcomes of the assessments exercise are in line with their own subjective impressions. That is, if the assessment exercise generates data which is in line with what staff already perceive (about colleagues' or their own teaching) then it will be judged valid. Validation becomes equivalent to confirmation as far as staff members are concerned. While student ratings of teaching may be the only valid way for gauging its quality, the pragmatics of acceptability by staff have to be taken into account. Research tends to indicate that staff and students will rate a given piece of teaching in similar ways (see e.g. Marsh et al., 1979 ; Blackburn and Clarke, 1975) , but the evidence is neither consistent nor conclusive, and this factor needs to be borne in mind.

Table 1 gives the student feedback for the various staff members who participated in the project. The items, (a) to (g), are those listed previously as the Core Questions. For the sake of clarity, standard deviations have not been given in the Table; the spreads of student ratings are referred to in the subsequent discussion. There are a number of interesting points associated with Table 1.

1. Students seem to be consistent in their ratings of members of staff on different occasions. The contexts which were most similar when staff were rated on two different occasions were those for staff members 'F' and 'G'. ('D' used a different teaching approach on the second occasion; 'E' had two quite different groups of students). Across all of the items, the ratings are very similar on the first and second occasions.

2. Assessment of teaching is sometimes said to be a popularity contest, with an overwhelming 'halo' effect (e.g. Aleamoni, 1974). The present results do not support this contention; students perceive staff members to have different strengths along the dimensions represented by the items. This is in line with other research which has been carried out into students' perceptions of 'good' teaching. Students have models of good teaching which are multi-dimensional, and are able to distinguish among teachers' competencies along these dimensions (see e.g. Kulic and McKeachie, 1975).

3. In some cases there are substantial differences of opinion among students regarding the quality of teaching to which they have been exposed. This is particularly marked for staff members 'A', 'B' and 'D': on the majority of items these three people attracted responses ranging all the

Table 1: Mean Student Ratings on the Items

Staff Member		Mean Ratings (a)	(b)	(c)	Items (d)	(e)	(f)	(g)	Approx No. of Students
'A'		6.06	3.98	5.08	4.02	4.22	4.23	5.71	50
'B'		5.24	2.95	4.37	2.77	3.57	3.79	5.52	100
'C'		6.69	6.55	6.26	6.36	5.63	5.52	5.64	100
'D'	1.	4.18	2.90	3.17	2.83	3.21	2.78	3.93	100
	2.	5.28	4.95	5.00	4.48	4.33	4.12	5.66	100
'E'	1.	6.31	6.14	5.84	5.92	5.71	4.94	5.73	50
	2.	6.52	6.57	6.77	6.39	6.16	5.94	6.32	100
'F'	1.	5.40	5.74	5.36	5.49	5.51	4.84	5.43	100
	2.	5.53	5.79	5.35	5.63	5.72	4.71	5.31	100
'G'	1.	6.25	5.94	5.77	5.82	5.89	5.13	5.21	100
	2.	6.04	6.31	5.80	5.97	5.99	5.00	5.54	100
All		5.80	5.26	5.38	5.08	5.09	4.70	5.46	

way from 1 ("Very poor: among the worst teachers experienced") to 7 ("Outstanding: among the best teachers experienced"). Perhaps this is not too surprising, as different students will have different views as to what constitutes good teaching, depending upon their attitudes to educational process. However, there is an aspect which is worth exploring

Table 2. Pattern of responses for Staff Member 'B'

Item	Response 1	2	3	4	5	6	7
(a)	-	3	6	19	32	55	7
(b)	17	29	34	31	8	2	1
(c)	2	8	18	41	23	23	5
(d)	21	33	27	30	7	-	1
(e)	8	17	30	44	14	9	1
(f)	9	16	21	33	24	11	3
(g)	-	-	5	16	30	48	20

(The figures in the Table refer to the number of student responses in each of the Response Categories).

further and staff member 'B' provides a good example. The pattern of responses for 'B' is given in Table 2. 'B' has strong views about the process objectives of the course which he teaches. These views are educationally defensible, but they tend to impose demands upon the students which are rather different from those encountered elsewhere. Some students are obviously very much 'turned on' by the different demands and alternative philosophy, while others find it anathema. The nett result is a wide spread of results and comparatively low ratings on some items. The basic question which is raised is: Is teaching which is defensible in an educational and philosophical sense, but which imposes demands on students which many of them consider unacceptable, 'good' teaching? There is no obvious answer. But what may have to be borne in mind is the fact that the great majority of students see the passing of the examination as their main priority. Teaching which does not help them accomplish this to any great extent is not likely to be viewed very favourably, regardless of the good intentions and skilled accomplishment which may exist.

4. The ratings for staff member 'D' are significantly higher on the second occasion when he was teaching in a different context which did not rely so heavily on lecturing skills. (This suggests that relying upon a single student evaluation is not desirable). Part of the reason for the relatively low evaluation on the first occasion was associated with the design of the questionnaire which, unintentionally (and perhaps inevitably), placed an emphasis on the lecture performance of staff. This is illustrated in the following comment from the departmental staff report on the whole exercise.

   > A major shortcoming of the evaluation in its present form, which needs to be dealt with in future questionnaires, is that the students saw it as primarily referring to lecture skills, rather than to other equally-valid methods of teaching such as small-group teaching and teaching on a one-to-one basis. Therefore, the results of the evaluation can be seen as one point of view which is highly valid, but nonetheless highly polarized.

   Perhaps the main point to be stressed here is the potential danger of relying upon student assessment to determine teaching contribution in a department (though this is not to deny the validity of students' perceptions and assessments). A general principle might be that good student assessment is a sufficient but not necessary condition to demonstrate teaching competence or contribution. But, it is probable that continued poor student feedback would indicate below-average teaching.

5. There is the question of whether these results represent a 'fair' measure of the quality of the particular teaching. If by teaching we mean the extent to which students are helped to learn and acquire a degree of the knowledge and understanding that their instructors possess, then the answer is probably 'Yes'. But there are aspects other than student perceptions associated with teaching (Jones, 1980). For example, students are not in a good position to judge the quality of what is taught - and colleague evaluation is a potential source of information for this purpose. In this study though, staff were not very keen to involve themselves in any kind of formal or systematic evaluation of their colleagues' teaching. It was considered that more harm than good would accrue from formal or systematic colleague assessment, and that good working and personal relationships could easily become damaged. The general opinion was that enough informal discussion, observation and exchange of opinion took place to make any more formal arrangement unnecessary. Several staff have

stated that students' comments and assessments relating to them personally are probably accurate, and that the patterns of responses are an accurate reflection of the relative teaching strengths of the members of the department. At the very least, staff feel that the assessments are 'not invalid'.

6. An attempt was made to gauge students' perceptions of the relevance of the course content by asking three initial questions relating to their thoughts on the importance of the course in overall professional preparation, their intended grade for the course, and how hard they were working outside class. Discussion with some of the students indicated that they thought that these questions were not particularly useful. For example:

   one could be working hard outside class either because one was really stimulated, or because the lectures were unintelligible and one had simply to gain a minimum understanding.

   most seemed to find it difficult to fill in, in any meaningful way, an 'intended' grade. And in any case, it is not clear what any relationship with response to the teaching says about the quality of that teaching.

Some indication of students' interest in subject matter is needed in order to put the assessment in context. The same is probably true for students' perceptions of teachers' personal qualities, as there was a fair indication that many students were not distinguishing between personality and the technical aspects of the teaching. The modification which has been made to the assessment forms to take account of these two factors is based on a suggestion by Scriven (1981). The first questions on the modified form are now as follows:-

(a) How do you feel about the course content?

Boring and irrelevant stuff	1	2	3	4	5	6	7	Really interesting material; vitally important for professional preparation

(b) How do you feel about the instructor as a person?

Doesn't appeal to me at all	1	2	3	4	5	6	7	Terrific: a great person

(c) Given the instructor's personal qualities and the course content, how good a job do you think s/he makes of teaching it?

Terrible	1	2	3	4	5	6	7	Excellent

Questions (a) and (b) are simply dummy questions, to alert the student to the particular factors, and (c) is the question of real interest. Whether the ratings on (a) and (b) relate to that on (c) will need further investigation.

The other modification which has been made to the assessment form relates to the fact that students seemed to be unduly influenced by the lecture performance of the teacher. The following question has been added to the form.

> Please assess the extent to which the instructor contributes to helping you gain an understanding of the course material. Take ALL of your contacts with the instructor into account - laboratories, small groups,

lectures, tutorials, one-to-one discussion, as the case may be.
(Rate from 1 to 7)

During this year a further series of teaching evaluations is being planned, using the modified assessment form. The scope of the project is being extended, to include other departments. At the moment it seems as if the evaluations are certainly useful in a diagnostic sense and can point out directions in which teaching improvements could take place. The extent to which the assessments can perform a significant role in demonstrating teaching competence, for promotions and tenure decisions, remains to be seen. However, there are indications from the Academic Committee of the University that some form of voluntary questionnaire for the evaluation of teaching may be a useful and acceptable source of information for promotions decisions. Also an increasing number of staff throughout the university are beginning to make use of the summative/formative style of questionnaire form. But there is still some way to go before a valid and systematic scheme of student evaluation of teaching - acceptable to staff - is available.

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The Making of Academic Promotion Decisions: Criteria and Processes

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Western Australian Institute of Technology

ABSTRACT
There is increasing recognition of the role of the academic promotion process in institutional reward structures, and of the influence of promotion criteria in guiding the work of academic staff. This study sought to investigate the relative importance of the criteria used in the making of promotion decisions as perceived by senior academics. Social judgement analysis was used to make explicit the bases underlying simulated promotion decisions. The data indicate that teaching and scholarship were important criteria for promotion from lecturer to senior lecturer, but that leadership was more important for promotion from senior to principal lecturer. The implications of these results for institutional policies and practices are discussed and, through an analysis of the nature of the judgements involved in promotion decisions, procedures which may assist decision making by promotion boards are suggested.

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INTRODUCTION

The recent report of the Australian Vice-Chancellor's Committee (1981) on the development of academic staff drew attention to the relationship between institutional reward structures and the professional work and development of academic staff. In particular, the report proposed that the quality of teaching should more adequately be assessed and rewarded in the making of personnel decisions, for example, those relating to promotion or tenure. Similar statements appear in the HERDSA policy statement on the professional development of academic staff (HERDSA 1980). Such decisions involve a complex process of judgement-making in which several factors are simultaneously assessed and related one to the other, in a manner which reflects the underlying values held by the decision-maker. In other words, the decision making process is both multi-dimensional and value-laden. Further, by virtue of the fact that such decisions are usually made by groups (for example, promotions committees), the process is complicated by the necessity to achieve group agreement. Differences in personal values and assumptions and differences between disciplinary areas can result in difficulties in achieving agreement. Since the process is value-laden, it is also potentially conflict-laden.

Bodies such as the AVCC Working Party are calling for a greater recognition of teaching in the making of personnel decisions. They argue that if teaching is to be accorded its proper role in institutions of higher education in Australia, the criteria whereby academic staff are selected, evaluated and advanced and their professional development encouraged should give appropriate emphasis to the quality of teaching and related activities. At the same time, institutions are increasingly recognising the importance of the reward structure as they consider ways of maintaining and enhancing the professional vitality of staff, in the face of reduced resources, declining career prospects, reduced staff mobility and possible staff retrenchment. Deterioration in the conditions affecting the work and careers of staff may be related to institutional reward structures, as was found by Moore, Lawrence and Erickson (1977). They obtained the perceptions of academic staff seeking promotion over a period of increasing staff retrenchment, and found that with each successive cohort a significant increase in the perceived importance of research as a criterion for promotion, and a corresponding decrease in the perceived importance of teaching and institutional service were reported.

Three areas of need exist in relation to the making of promotion decisions. First, little information is available, particularly in Australia, concerning the extent of contribution of each factor to the decision making. What is the actual relative importance of teaching effectiveness, quality of research, institutional leadership or community service in the making of promotion decisions? The criteria used are frequently more implicit than explicit, creating difficulties for the group decision making process, and for academic staff seeking guidance concerning the emphases to be given to different activities in their professional work and development. Genn (1980) found that the criteria university staff saw being used in promotion decisions differed considerably from their "ideal" criteria. Staff perceived that decisions were such as to "emphasise research, publications, scholarly reputation and administrative work, and to de-emphasise effectiveness of service to students and the community" (p. 168). Genn postulated that such a discrepancy is a source of potential tension and personal uncertainty. At a time when conditions affecting the professional work of academic staff are deteriorating, staff consider the provision of clear, consistent and public criteria to guide promotion and related personnel decisions to be of

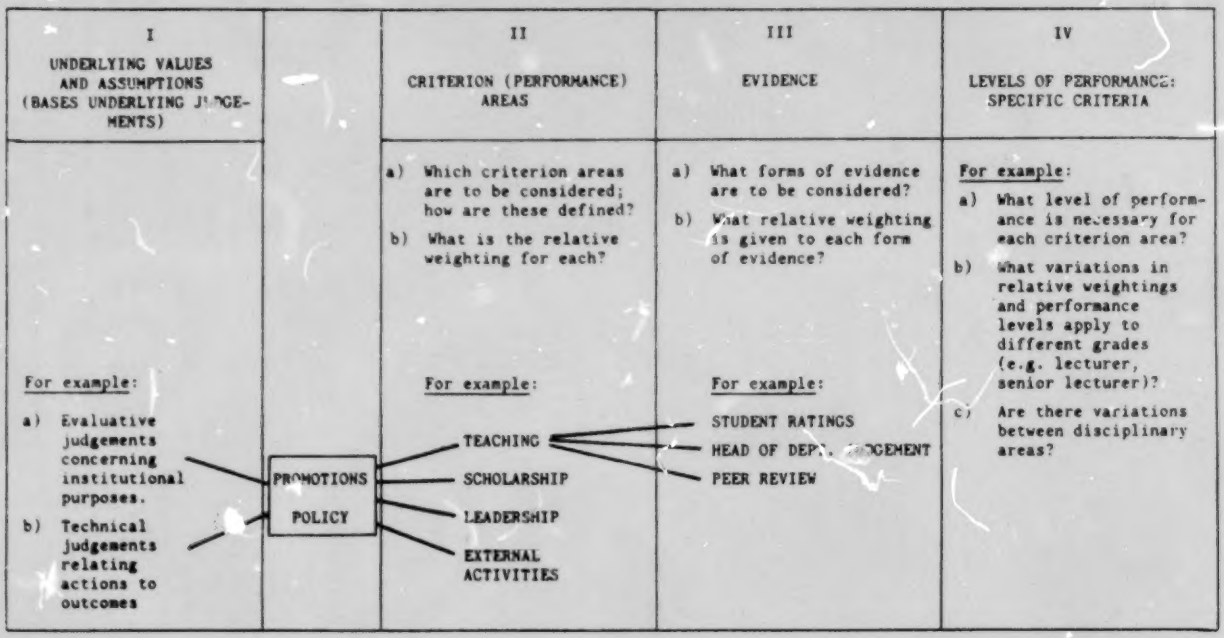
I
UNDERLYING VALUES AND ASSUMPTIONS (BASES UNDERLYING JUDGEMENTS)
II
CRITERION (PERFORMANCE) AREAS
III
EVIDENCE
IV
LEVELS OF PERFORMANCE: SPECIFIC CRITERIA
a) Which criterion areas are to be considered; how are these defined?
b) What is the relative weighting for each?
a) What forms of evidence are to be considered?
b) What relative weighting is given to each form of evidence?
For example:
a) What level of performance is necessary for each criterion area?
b) What variations in relative weightings and performance levels apply to different grades (e.g. lecturer, senior lecturer)?
c) Are there variations between disciplinary areas?
For example:
a) Evaluative judgements concerning institutional purposes.
b) Technical judgements relating actions to outcomes
PROMOTIONS POLICY
For example:
TEACHING
SCHOLARSHIP
LEADERSHIP
EXTERNAL ACTIVITIES
For example:
STUDENT RATINGS
HEAD OF DEPT. JUDGEMENT
PEER REVIEW

Figure 1 - Judgements Involved in Promotions Policy and Decisions

increasing importance. (Lonsdale and Williamson, 1980; Powell, 1981).

Secondly, little is known about the most appropriate means of measuring and reporting the quality of performance for each factor. Are student ratings the most effective means of assessing quality of teaching? What other indicators of teaching effectiveness might be used? Is the number of publications an effective indicator of research quality? Thirdly, the decision making process itself is obscure. It is one which often results in considerable tension and conflict, both for those making decisions and for those affected by them. Decision making groups need help in basing decisions on explicit criteria and evidence, and in making them in an objective manner with minimal conflict.

This study was concerned with the first and third of these questions. It sought to investigate empirically the relative importance of the criteria used in the making of promotion decisions, as perceived by senior academics. Two levels of promotion were studied: lecturer to senior lecturer, and senior lecturer to principal lecturer. Data were collected using interviews and the social judgement analysis procedure. Social judgement analysis is a procedure which seeks to make explicit the values underlying judgements, so as to assist the decision making process. The project also aimed to contribute to the development of revised institutional policies and procedures concerning the promotion of academic staff.

JUDGEMENTS AND VALUES INVOLVED IN PROMOTION DECISIONS

The making of promotion decisions involves a set of judgements which may be considered to relate to each other in an hierarchical manner. They are summarized in Figure 1. One set of judgements concerns the relative importance of each of the criterion (or performance) areas to be considered in making decisions. For this study the areas were teaching, scholarship (including research), leadership and external service. For each performance area a second level of judgement relates to the weighting to be given to each form of evidence. For example, in assessing the quality of teaching, what should be the relative emphases given to student ratings, ratings or reports from the head of department, peer judgements, or other forms of evidence? Some information on this question is available from the work of Salthouse, McKeachie and Lin (1978).

Judgements are also involved in the interpretation of evidence. For example, what level of student ratings is equivalent to excellent teaching performance, or what number of research publications is indicative of excellence in scholarship? Other factors also influence these judgements. One factor of importance is academic rank. Do the criteria applying to promotion from lecturer to senior lecturer apply also to promotion from senior lecturer to principal lecturer? Variations between disciplinary areas may also occur. Should teaching and scholarship have the same relative importance for social scientists as for physical scientists? Is the relative importance of each form of evidence the same for each disciplinary area?

These various judgements are in turn based on underlying values, assumptions and reasoning which guide the individual decision-maker's choice. Depending on the nature of these underlying bases, judgements may be of three types (Lord, 1979). Firstly, predictive or technical judgements involve the use of explicit evidence, assumptions and explanatory logic to predict the

consequences of certain actions. For example, in determining the importance of research as a criterion it may be predicted that the encouragement of research results (among other things) in improved teaching. However, as Helmer and Rescher (1959) argue, well established explanatory laws do not exist in the social sciences, so predictive judgements must be based on "informed intuition", in combination with any available explicit evidence and explanatory information. While predictive judgements do have underlying bases, they are essentially value free.

The second type are evaluative judgements based on social values, in which an assessment is made of the desirability of a policy or action, or the anticipated consequences of a decision. Hence, for example, in determining the relative importance to be placed on the quality of teaching vis-a-vis the quality of research in making a promotion decision, a judgement maker would, among other things, be considering social values relating to the role and nature of the institution and the role of academic staff. Evaluative judgements based on social values relate closely to institutional goals. Thirdly, evaluative judgements may be based on personal values which are derived from the manner in which the issue or decision is perceived to affect the judgement maker personally.

In practice, it is likely that any single judgement relating to the promotion of academic staff would involve a combination of predictive judgements and judgements based on social and personal values. The bases underlying such judgements could therefore be quite complex.

AIDING DECISION-MAKING

The thesis underlying this study is that the decision-making process is aided if the bases underlying judgements are made more explicit. This occurs in two main ways. First, the individual may be assisted to better understand relationships between the variables, thereby aiding judgement making. Secondly, group conflict is reduced through the provision of cognitive feedback.

The complexity of the judgement process concerning, for example, promotion criteria, means that judgements made by individuals involve the use of a cognitive process based on both rationality and intuition, in a manner which is influenced by underlying values, beliefs and assumptions. It is a private process, obscure perhaps to the person himself, and more so to others. Hammond et al. (1977) argue that a necessary aid to the judgement process is a procedure which assists a person to externalize the bases underlying his judgements; this enables learning and thereby an improvement in judgement making. Through a process of

> externalization of otherwise hidden dynamic processes, ... the learner may ask "What if" questions about his cognitive system .....; that is, he may ask how his judgement would be changed if certain parameters and functions of his cognitive system were changed. (Hammond et al. 1977, p. 359.)

Similarly, Eden (1979) found that the provision of feedback to decision-makers concerning their patterns of values and beliefs was valuable in assisting their understanding of the complexity of the variables and the interactions between these. In other words, the individual is aided if the

more-or-less obscure judgement process is externalized and presented in a way which assists his understanding of underlying bases and relationships.

Promotion decisions (and, more generally, judgements and decisions concerning policies) are usually made by groups. Research into small group decision-making has led to a number of guidelines to increase the quality and efficiency of the process (see, for example, Delbecq and Van de Ven, 1971). The provision of feedback to a group member concerning his own judgements and those of others is generally considered to be beneficial, although there is not agreement on how this feedback should be provided.

Social judgement theory (Hammond et al., 1975) distinguishes between outcome feedback and cognitive feedback. Outcome feedback provides information to the individual about the "correct" response. In groups, outcome feedback consists of information about the judgements of the other group members, in the form of, for example, the proportions of members making particular judgements or estimates. Cognitive feedback is concerned with the bases underlying judgements, in terms of the dimensions or factors involved in the judgement and the relationships between these. Research on individual learning reviewed by Brehmer and Hammond (1977) indicates that performance is improved through the provision of cognitive rather than outcome feedback. Rohrbaugh (1976) summarized evidence concerning the negative effects of outcome feedback in the group situation, and demonstrated experimentally that conflict is reduced and the quality of group decisions enhanced in groups provided with cognitive feedback rather than outcome feedback. Further support for cognitive feedback arises from studies of the Delphi Technique as a procedure for group judgement making. (Weaver, 1972; Waldron, 1971; Lonsdale, 1975.)

SOCIAL JUDGEMENT ANALYSIS

Social judgement theory, from which the social judgement analysis procedure is derived, is concerned with the ambiguity or uncertainty inherent in the judgements made by policy makers, or by those making judgements about policies. It deals directly with the intuitive judgement process described by Helmer and Rescher (1959), and has the aim of making explicit the bases underlying complex judgements, so as to assist the individual judgement maker and the group decision-making process. Social judgement analysis uses the multiple regression equation as a means of describing an individual's judgement policy, that is, the manner in which the person makes judgements, over a range of cases, concerning a particular policy area. In the study reported here, each case consisted of a "profile" for a hypothetical applicant for promotion, describing the applicant's level of performance or contribution on each of four criterion areas: teaching, scholarship, leadership and external activities. Figure 2 shows examples of profiles for two hypothetical applicants.

For the range of hypothetical applicants, the magnitudes of the extent and quality of contribution on each of the four dimensions comprise the independent variables for the regression analysis. The judgement maker considers each hypothetical applicant, as represented by the profile, and makes a judgement of desirability - in this case, a "promotability score" is assigned. This indicates the extent to which the hypothetical applicant matches the judge's ideal policy. Over a series of cases, the promotability scores are treated as the dependent variable, enabling a regression analysis

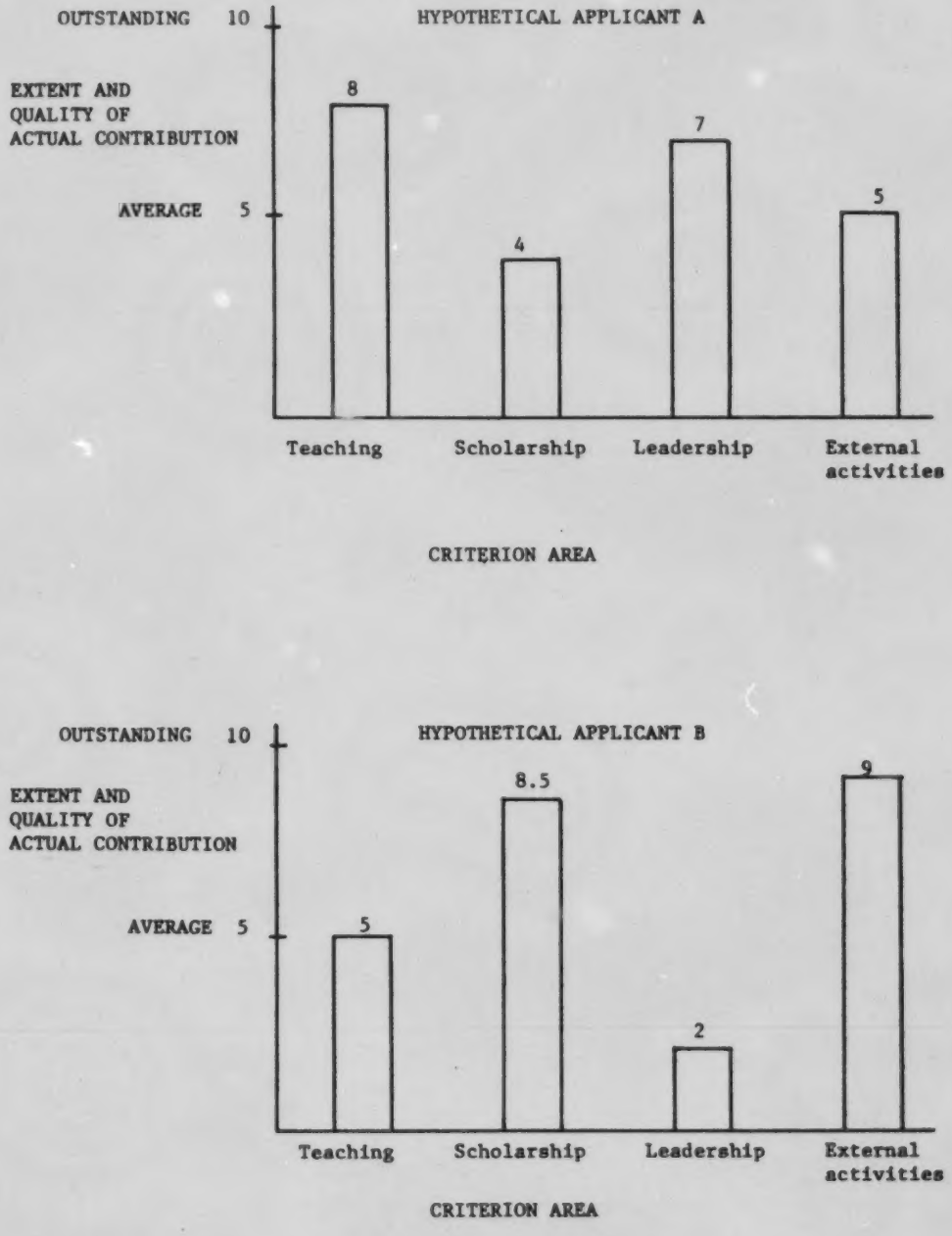

Figure 2 - Performance Profiles for Two Hypothetical Applicants for Promotion

to be performed for each judge. The resulting beta weights indicate the relative importance placed on each criterion area in the person's judgements, and the ability of the regression model to represent the actual judgements is indicated by the multiple correlation (multiple r^2).

The particular value of social judgement analysis as a procedure for analysing the judgements made concerning promotion decisions lies in its ability to model the actual decision process. In making a judgement about any particular applicant, a decision-maker simultaneously considers the levels of performance on all the variables, in a process which allows trade-offs and compensations to be incorporated. For example, a low performance level on one variable normally considered important might be compensated by a pattern of high levels of performance on certain other variables. Procedures which simply require a reporting of the decision maker's preference levels on each variable taken independently do not accommodate such complexities in the decision process. A more detailed discussion of social judgement analysis may be found in Hammond et al. (1975).

PROCEDURES

Participants

Fourteen senior academic leaders, consisting of the chairman of division and all heads of school and heads of department in one of the four academic divisions at the Western Australian Institute of Technology were invited to participate in the study. All were currently involved in the making of promotion decisions, either through the preparation of recommendations at the school level or through membership of a divisional promotions committee. All agreed to participate.

Clarification of Criterion Areas

The first step was the identification of the dimensions, or criterion areas, which decision makers used when making promotion decisions. An indirect procedure derived from Popham's (1975) attitude scale construction technique was used. In individual interviews, respondents were asked to visualise, but not identify, an individual worthy of promotion from lecturer to senior lecturer, and from senior lecturer to principal lecturer, and to explain why that person should be promoted. The same procedure was used for a person judged not worthy of promotion.

Analysis of the interview data lead to the identification of four performance areas which accommodated the main decision criteria employed by all participants. These were teaching, scholarship, leadership and external activities. The manner in which each area was defined is shown in the appendix.

Although the performance areas so identified resemble those commonly reported, the initial interview step was considered important for several reasons. First, it was necessary to identify the number of variables actually used by the decision makers, and to define these in their own terms in a manner consistent with the particular context. In this way, understanding of the variables was maximized and commitment to the process

promoted. In fact, the precise definitions of the performance areas did differ in certain important respects from those commonly used, as may be seen from the appendix. Secondly, this step yielded valuable explanatory information which assisted subsequent interpretation of the group judgements; this is illustrated by a discussion of the judgements relating to the leadership area in a later section of this paper.

Policy Capturing

A set of twenty-five hypothetical applicants for promotion was developed, each case varying in terms of the level of performance or contribution on each of the four areas, as shown in Figure 2. Evaluators were asked to consider each hypothetical applicant and to make a judgement of "promotability" on a 0–20 scale. Scores of 16–20 meant that an applicant would be highly recommended for promotion, 12–16 meant that an applicant would be recommended, 10–11 was marginal, and 10 or less meant 'not suitable for promotion'. In the real decision-making situation this judgement process would, in essence, contain two components. The first would involve interpretation of the available evidence for each performance area and the making of a judgement concerning a level of performance. For example, particular student ratings combined with a head of department's assessment and other evidence might be considered to constitute a high level of performance on the teaching area, as for applicant A in Figure 2. The second judgement involves the simultaneous consideration of all dimensions in the profile to determine the applicant's promotability. In this study, evaluators were asked to assume that the first of these judgements had previously been made, resulting in the range of profiles provided. This procedure was followed for promotion from senior lecturer to principal lecturer. It was then repeated for a set of hypothetical lecturers applying for promotion to senior lecturer, using the same profiles arranged in different order.

Analysis

Multiple regression analysis was used to obtain a set of beta weights for each evaluator indicating that person's policy, that is, the relative weighting applied by the evaluator to each performance area when making promotion decisions. For each evaluator the dependent variable was the promotability score, the independent variable being the performance levels in the twenty five hypothetical profiles.

RESULTS

As might be expected, there was considerable variation in the judgement profiles of the fourteen senior academic staff. There were also differences in the relative importance of the performance areas for the lecturer - senior lecturer promotion step, as compared with senior lecturer - principal lecturer.

Lecturer to Senior Lecturer

While the procedure is not sufficiently accurate to enable detailed analysis

JUDGE NUMBER	RELATIVE WEIGHTS (BETA WEIGHTS)				MULTIPLE CORRELATION (multiple r^2) percent	TYPE
	TEACHING	SCHOLARSHIP	LEADERSHIP	EXTERNAL ACTIVITIES		
1	.54	.88	.45	.22	81	2
2	.77	.64	.45	.59	81	1
3	.66	.77	.42	.18	82	2
4	.79	.64	.43	.15	90	1
5	.54	.53	.52	.00	70	1/2
6	.80	.35	.49	.29	76	1
7	.54	.89	.56	.31	81	2
8	.42	.92	.31	.04	85	2
9	.45	.36	.62	.22	53	3
10	.73	.38	.36	.63	66	1
11	.68	.67	.58	.31	82	1/2
12	.73	.72	.60	.37	91	1/2
13	.41	.90	.57	.13	86	2
14	.48	.73	.71	.38	76	2/3

Table 1: Judgement profiles for promotion from Lecturer to Senior Lecturer

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JUDGE NUMBER	RELATIVE WEIGHTS (BETA WEIGHTS)				MULTIPLE CORRELATION (multiple r^2) percent	TYPE
	TEACHING	SCHOLARSHIP	LEADERSHIP	EXTERNAL ACTIVITIES		
1	.43	.59	.84	.30	81	3
2	.49	.60	.67	.67	72	3
3	.47	.93	.28	.04	89	2
4	.69	.44	.62	.08	88	1
5	.50	.63	.63	.38	65	2/3
6	.62	.69	.71	.24	83	2/3
7	.42	.76	.48	-.07	72	2
8	.09	.84	.75	-.09	95	2
9	.58	.54	.41	.39	51	1/2
10	.42	.55	.85	.40	80	3
11	.44	.44	.73	.19	66	3
12	Did not complete ratings for this level.					
13	.53	.69	.74	.22	86	2/3
14	.31	.81	.77	.30	80	2/3

Table 2: Judgement profiles for promotion from Senior Lecturer to Principal Lecturer.

of the beta weights, it does provide a broad indication of the relative weightings applied by individual decision makers to each of the criterion areas. At this level of analysis, respondents could be placed in categories which broadly reflected their preference patterns. Three basic groups were apparent:

(a) Those who placed the highest value on teaching (Type 1)

(b) Those who placed the highest value on scholarship (Type 2)

(c) Those who placed the highest value on leadership (Type 3)

As Table 1 demonstrates, most respondents, in rating the 25 hypothetical applicants for promotion from lecturer to senior lecturer, were approximately equally divided between those who placed the highest weighting on teaching and those who placed the highest weighting on scholarship. In most cases the weighting given to external activities was relatively low, while almost all respondents saw leadership as being reasonably important.

Senior Lecturer to Principal Lecturer

A notable shift in emphasis is evident, as shown by Tables 2 and 3. All but one of these who placed the highest, or equal highest, value on teaching for lecturer - senior lecturer promotions have quite different value systems for promotions from senior to principal lecturer, placing substantially more emphasis on leadership. Leadership was most important for four respondents, and of approximately equal importance with scholarship for a further four. Figure 3 shows typical changes for respondent numbers 10 and 6. In other words, for the group as a whole, while teaching and scholarship were seen to constitute the more important criteria for promotion from lecturer to senior lecturer, leadership was seen to be of considerable importance for promotion from senior to principal lecturer.

The results for Judge 9 should be interpreted with caution. In making the series of judgements, this person had a low multiple correlation. This could arise because the person was not consistently using the information provided (perhaps through a lack of understanding of the procedure), or because a basis for judgements was being employed which could not be adequately captured by the multiple regression analysis.

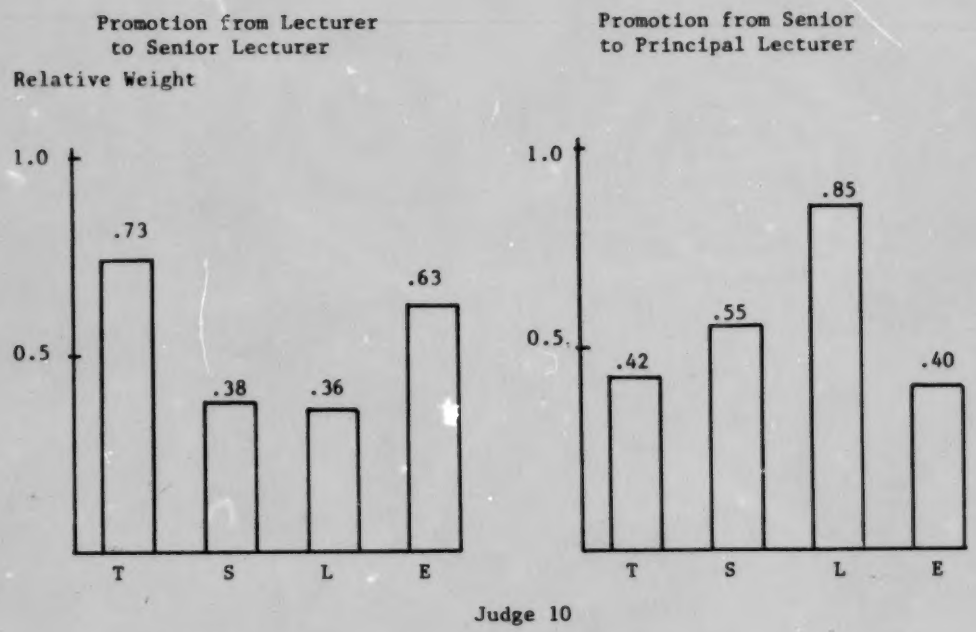
Why was there such a substantial emphasis on leadership for promotion from senior to principal lecturer? Some insights into this question were provided through the initial interviews. The descriptions of persons considered worthy of promotion, particularly those at senior lecturer level, indicated that leadership was in many cases an important criterion. This was variously described as the ability to set an example to, and lead, a group of academic colleagues; the ability to command the respect of colleagues both as a person and an academic; the ability to enthuse staff; or the capacity to administer an academic unit. Certain staff considered worthy of promotion had, among other things, considerable ability in this area and were considered to have contributed significantly to the development of their school and the Institute, or had demonstrated the capacity to provide leadership at the principal lecturer level.

Two forms of leadership were identified. An "academic leader" was described as one who may or may not have specific administrative responsiblities or capacity, but who, by virtue of his scholarship, ideas and creativity, together with appropriate attitudes of openness. helpfulness and

	Type 1	Type 1/2	Type 2	Type 2/3	Type 3
	Teaching most important	Teaching and scholarship approx. equal	Scholarship most important	Scholarship and leadership approx. equal	Leadership most important
Lecturer to Senior Lecturer					
Judge numbers	2,4,6,10	5,11,12	1,3,7,8,13	14	9
Senior Lecturer to Principal Lecturer					
Judge numbers	4	9	3,7,8	5,6,13,14	1,2,10,11

(Note: Judge 12 did not rate the Senior Lecturer set)

Table 3: Shifts in priorities for lecturer-senior lecturer, and senior-principal lecturer promotions.



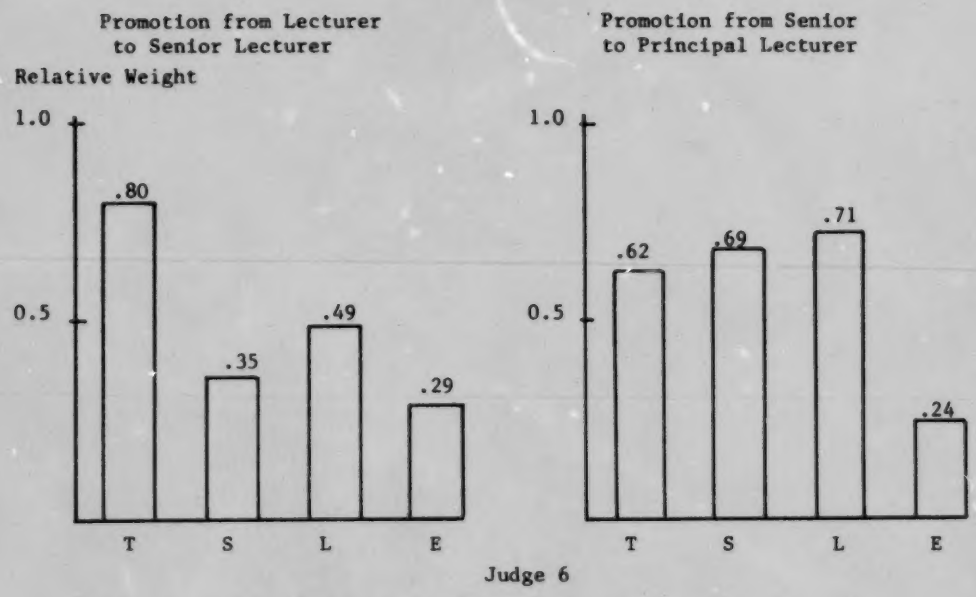


Figure 3 - Judgement Profiles for Judges 10 and 6

(Key: T - Teaching, S - Scholarship,
L - Leadership, E - External activities)

interpersonal skills, was able to motivate and lead a group of academic colleagues in the pursuit of academic goals. Such leadership would be demonstrated through, for example, leadership of a teaching team, course development group or research area.

An "administrative leader" was described as one with high ability in the management of an organizational unit (school or department), which involves skills of financial management, personnel management, group decision making and goal setting, together with an understanding of the broader institutional system. Through the latter, the person might contribute significantly to institutional development, and would be able to work effectively in and through the system in the interests of the organisational unit - for example, in the acquisition of resources, or the approval of new academic policies or programs.

Both areas of leadership were seen to be interdependent. A number of functions, personal skills and attributes are common to both. In particular, each area requires skills of personnel management and interpersonal relations. Further, it was considered that the organisational and staffing structure of the Institute was such that, in general, effective leadership would arise from a combination of academic and administrative leadership.

USES OF SUCH RESULTS

Identification of the bases underlying promotion decisions, and the particular patterns emerging in this case, would have implications for a number of areas of institutional policies and procedures. Firstly, such results could be examined in the light of institutional policies or criteria for the promotion of academic staff, to establish the degree of congruence between the actual perceptions and values of individual decision makers, and institutional policies. In turn, the results could also be examined in relation to institutional goals, or could be of assistance in clarifying institutional goals. An expression of the values of senior academic leaders should be indicative of the directions in which those persons would wish to see an institution develop.

Secondly, if the actual criteria used in making promotion decisions differed from one level to another, as was the case in this experimental situation, there would be implications both for the nature of the evidence applicants might provide to a promotions committee, and for the conduct of staff development programs. For staff at the level of senior lecturer, programs concerned with the development of leadership skills might be appropriate, in addition to assistance provided in the areas of teaching and scholarship. Similarly, in preparing applications for promotion, staff at the level of senior lecturer might find it advantageous to place emphasis on information relating to leadership.

A third implication relates to the procedures used by promotions committees. If such differences in criteria were operating at the different levels of appointment, it would be important to use a procedure which considered applicants within categories but did not attempt to develop rankings across levels, as such inter-level comparisons could be difficult and not very meaningful. For this study, the particular significance of the information lies in its potential value in aiding group decision-making.

AIDING GROUP DECISION MAKING

The analysis indicated that substantial disagreement existed between members of the group. For example, while most respondents saw leadership as relatively important, person 3 did not; this person placed heavy emphasis on scholarship. Similarly, while also highly valuing scholarship for both levels of promotion, person 8 was virtually ignoring information concerning teaching and external activities when judging applicants for promotion to principal lecturer. Such differences could lead to conflict if they existed between members of an actual decision-making group, for example a promotions committee. Procedures which assisted in resolving such differences could be desirable.

As argued earlier in this paper, a major reason for seeking to make explicit the bases underlying individual judgements is to aid the group decision-making process. Steps whereby an actual promotion committee might utilize such a procedure are now briefly summarised. In essence, two steps are involved. The first involves the capturing of individual policies, in order to reach agreement on the policies to be used by the decision-making group. Only when this first step had been completed would the second step - the consideration of actual cases for promotion - be taken.

Achieving Group Policy

(1) Using the judgement analysis procedure described above, the judgements of each member of the decision making group would be obtained.

(2) These would be analysed to determine the individual policies, indicating the preferred weighting assigned by each individual to each criterion area.

(3) This information would form the basis for a group discussion, in which areas of agreement and disagreement would be explored, with a view to achieving agreement on the policy to be utilized by the group. This might be expressed in an appropriate quantitative form.

Consideration of Actual Cases

(4) Individual cases are usually documented in the form of an application in which a staff member presents an argument for promotion, incorporating supporting information or evidence in order to demonstrate the quality of performance and contribution for each of the criterion areas. Such evidence might include, for example, the results of students surveys of teaching, information concerning research activities and published work, or accounts of relevant community oriented activities. Additional information, for example, a head of department's assessment, may also be available. Committee members may interpret this evidence differently, and it would be desirable to obtain each member's interpretation of the applicant's level of performance on each criterion area.

In the light of the evidence presented, each committee member would assign a score to each of the criterion areas, for each applicant. In other words, the committee member would be indicating his or her estimate of the profile for the applicant based on the actual evidence.

These profiles would be similar in nature to those used for hypothetical applicants in the judgement analysis exercise.

(5) These profiles would be compared and discussed, in order to reduce differences in judgements. Additional factors, such as the nature of the applicant's discipline, or the relationship with the applicant's functional responsibilities, could also be considered at this point.

(6) In the light of the agreed criteria (step 3), that is, through the application of previously agreed policy, the decision relating to each case would be made. This step would be the group equivalent of the individual judgements of "promotability" made in the judgement analysis exercise.

CONCLUSIONS AND DISCUSSION

This study applied the social judgement analysis procedure to an examination of the criteria used by senior academic leaders when making promotion decisions. For the set of respondents studied, the results demonstrated considerable variation in the relative weightings applied by individual decision makers to each of the criteria of teaching, scholarship, leadership and external activities. For promotion from lecturer to senior lecturer, respondents were approximately equally divided between those who placed the highest weighting on teaching and those who placed the highest weighting on scholarship. At this level, most respondents saw leadership as being reasonably important.

A markedly different value system was evident for promotion from senior to principal lecturer. Teaching was seen to be substantially less important as a criterion for promotion; to a lesser extent scholarship was also reduced in importance. A candidate's demonstrated or potential ability to provide academic or administrative leadership, or both, was seen to be of considerable importance for promotion at this level.

An assumption underlying social judgement analysis is that the variables are perceived by the judgement maker to have meanings which are independent and self-contained. While an attempt was made through the initial interviews to develop and define variables (criteria) which were independent, it is likely that all variables in this study were, at least to some extent, interrelated. For example, some of the personal attributes which contribute to quality of teaching may be perceived to contribute similarly to academic leadership; a high level of academic leadership would be partly dependent on a high level of scholarship. Accordingly, the beta weights must be interpreted with some caution.

There is a trade-off between the precision with which measurements of this type may be made, and the extent to which the procedures are meaningful and useful to decision-makers. Attempts to achieve greater precision through defining variables in a more independent fashion may result in an artificiality, from the perspective of the decision-maker. The approach used in this study has sought to apply some of the principles of action research identified by Buhl and Lindquist (1981). In particular, the study has sought to involve decision-makers in the collection of information in a manner which could be of assistance to the actual decision-making process.

A problem also arises from the fact that, in this study, judgements were made concerning hypothetical candidates for promotion, rather than actual

candidates. Under these circumstances the judgement maker was forced to rely solely on the information provided. In real life it is possible that additional information may be available, for example, through personal knowledge of or acquaintance with a candidate. This prompts such questions as: In what ways do decision-makers utilize the formal evidence when making actual decisions? Is their use of the formal evidence modified by additional personal knowledge? To what extent are judgements influenced by feelings toward the candidate as a person? A research design which applied the procedures of this study to actual candidates could be used to explore such questions.

While this study did not proceed to the stage of actual decisions, a procedure whereby social judgement analysis could be incorporated into a series of steps designed to facilitate the decision-making process was described. This procedure would seek to enhance the understanding of individual decision-makers and reduce conflict and enhance decision-making effectiveness in the group. Further research to assess the effectiveness of these procedures is planned.

APPENDIX: DEFINITIONS OF CRITERION AREAS

The manner in which the four criterion areas of teaching, scholarship, leadership and external activities were defined is shown below. These definitions were derived from the preliminary interviews conducted with respondents.

TEACHING

For the purposes of promotion, "teaching" includes only those factors under the control of the staff member, and excludes such aspects as course content or instructional design which may be imposed on the individual by a subject committee or board of study. Within this limitation, the term "teaching" is broadly defined to encompass classroom instruction and communication skills (including practical or clinical teaching), team teaching skills, quality and relevance of content and teaching materials, relationships with students, personal organisation, student assessment, and postgraduate supervision - as appropriate to the staff member's teaching area and responsibilities.

SCHOLARSHIP

Scholarship is the recognition of the individual's authority or standing in the relevant profession or scholarly area. A person high on this criterion would be a recognised authority in his or her own field, who makes a visible contribution to the discipline, and who is active in developing and investigating new ideas and applying these in practice. A high level of scholarship is synonomous with academic or professional excellence. The extent and quality of applied research and development is one aspect, or an indicator, of scholarship. Specific indicators or evidence include:

(i) publication

(ii) invitations to present papers, or exhibit artworks

(iii) invitations to conduct applied research, including educational research

(iv) research grants received

(v) "high level" consulting or problem solving (i.e. applied research and development) - as distinct from "routine" consulting

(iv) recognition of excellence by the professional area, for example, through the granting of a fellowship. (Service to a professional association as an office bearer would be included in the "External activities" area.)

"Scholarship" is synonomous with the following terms, which were suggested in the interviews:

academic standing
professional standing
academic reputation
academic quality
academic ability
professional visibility
academic excellence
professional excellence

LEADERSHIP

Leadership is demonstrated high level ability to set an example to, and lead, a group of colleagues in the pursuit of Institute and School goals, for example, by developing and implementing a new course, promoting and fostering innovations, leading a research activity, leading the professional development of colleagues or administering an academic unit. This involves personal skills, for example, of team leadership, goal setting, conflict resolution, personnel management, the ability to enthuse staff, together with attributes of co-operation, respect of colleagues, and availability. The institutional service aspect of leadership is concerned with significant contributions to institutional decision-making and management through committees or working parties, or effectiveness in the administration of an academic unit (school, department, or section) through personnel management, budget management, group decision-making and goal setting. "Leadership" is synonymous with:

professional and academic leadership
academic administration
educational administration
institutional service
internal service
academic leadership
administrative competence
administrative leadership

EXTERNAL ACTIVITIES

This area is concerned with the quality and extent of contributions to the general community or the professional area, relevant to the staff member's area of appointment in the Institute. It would be demonstrated through, for example:

(i) Representing the School to outside professional, industrial or

business organisations.

(ii) Significant contributions to the activities of centres for applied research and development in promoting professional partnerships between the institution and the external community.

(iii) High quality of contributions to the profession or professional association.

(iv) Invitations to provide expert advice, joint committees of enquiry etc.

(v) Significant contributions to professional practice, for example, in accounting practice, architectural practice, librarianship, clinical practice in the health sciences, or raising community awareness of artistic endeavour.

(vi) Initiating, or being invited to conduct, continuing education or in-service courses for outside professionals.

"External Activities" is synonomous with:

external service
community service
community participation
external professional activities

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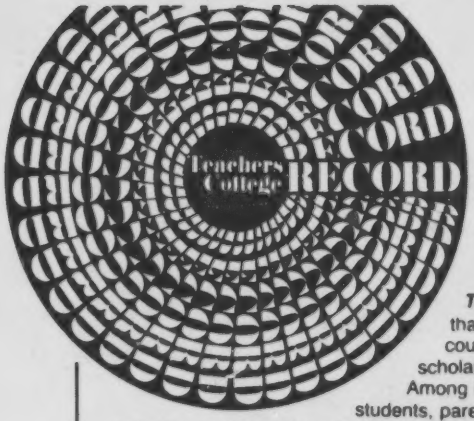

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Some Characteristics and Attitudes of Academics in Australian Universities and Colleges of Advanced Education

John A. Bowden and John Anwyl
University of Melbourne

ABSTRACT
This paper examines some important characteristics and values of Australian academics in universities and in colleges of advanced education, derived from a national study we conducted in 1978. The data are discussed under a number of headings: research interests and activities, teaching, qualifications and level of appointment, tenure, study leave, role satisfaction and attitudes to institution, attitudes to funding, institutional government and institutional democracy, access to tertiary education, role of universities and CAEs, tertiary institutions and the state, general educational issues, social issues, public debate, and demographic and personal data.

There are differences between the two groups on a number of variables, among them being tertiary qualifications held, work activities and interests, and previous work experience. Some of these differences are related to the objectives of the institutions and how they were established and staffed. On most educational and social values, however, the opinions of the two groups are similar except for their views on the roles of universities and colleges. They most differ when they reflect on each other.

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INTRODUCTION

Federal Government acceptance of some of the major recommendations of the 1964 Martin Committee of Enquiry into the Future of Tertiary Education in Australia led to the establishment of colleges of advanced education (CAEs). Some of these colleges (1) developed from existing technical colleges and other institutions such as paramedical or agricultural colleges; others were new creations. Later, some were developed from the base of existing teachers' colleges. Now, CAEs constitute a sector of tertiary education which rivals the university system in size and overlaps it in some functions. Over the last two decades there has been constant debate about the distinguishing characteristics of universities and colleges, and regular expressions of fear that academic drift during periods of intense institutional competition would blur the differences. With the onset of voluntary and compulsory cross-sectoral amalgamations in recent years has come the greatest challenge yet to the stability of the organisational structure of higher education established in the 1960s.

The history is told elsewhere; the main purpose of this paper is to examine some important characteristics and values of the academic staff of universities and CAEs as derived from a national survey in late 1978. In that study, titled the Social and Educational Role and Values of Australian ACademics (SERVAAC) study, we gathered data from over 2 000 academics to form a nationally representative file.

There are discipline differences between the sectors. While arts and humanities, social sciences, architecture, agriculture and forestry, commerce, natural sciences and engineering are well-represented in both sectors, medicine, veterinary science and dentistry remain the exclusive domain of the universities. CAE staff are more likely than university academics to be in the education and para-medical fields. There is a good deal of overlap however, with over 70 per cent of respondents to our survey in each sector in the fields mentioned above as common to both. This is consistent with the Australian Bureau of Statistics (ABS) data (1979) which show 78 per cent of university staff in those fields in 1978 and the data for the colleges (Australian Bureau of Statistics, 1980) which show 72 per cent of CAE staff in the fields common to both sectors.

These and many other non-attitudinal differences discussed in this paper may be explained by the objectives of the institutions, the way they are funded and the backgrounds of their staff. However it is useful to explore the nature of the differences. Examination of tertiary qualifications, prior work experience and the pattern of activities in the daily lives of the two groups of academics reveal significant differences, but this does not hold true of family and school backgrounds. In respect of most educational and social values examined, there is great similarity in the opinions of the two groups but there are significant differences between their views on the role of universities and colleges. They most differ when they reflect on each other.

RESEARCH INTERESTS AND ACTIVITIES

Universities are distinguished from other tertiary institutions by their research role. The job specification of university staff usually requires a dual teaching and research function; in other tertiary institutions the main emphasis is on teaching. Thus one would expect university staff to show up in the data as being more interested and more active in research than CAE academics. Greater participation in post-graduate teaching, higher qualifications and a greater intrinsic interest in academic disciplines would also be expected. Conversely, CAE staff would be expected to be more interested, and engaged for a greater proportion of their time, in teaching activities. They might therefore be more innovative in their teaching interaction with students and perhaps develop closer relationships with them. Do differences of this sort exist? Our SERVAAC study indicates that to varying degrees they do. Our data show (see Table 1), as job specifications imply, that university staff (2) spend twice as much time as college staff on research and that college staff have a much greater teaching load. Data from the 1977 study for a Federal Government inquiry (Williams, 1979) are included in Table 1 for comparison; a similar pattern is evident but with a greater proportion of time spent on teaching in both sectors. However, the Williams survey sample included tutorial staff, and respondents in the Williams study were asked to report on their teaching activities under six separate headings which were later summed together. This would account for at least part of the variation between the two sets of data. The Williams data do show in addition that the greater proportion of time spent on teaching by CAE staff compared with those in universities applies across all aspects of teaching: formal classroom contact, preparation for teaching, design of courses, marking students' work and meeting students outside the classroom.

It is possible to examine the different research emphases between the sectors from another point of view. The data so far presented concern the proportion of time spent on research which may or may not reflect academics' interest in research activities. The nature and goals of their sector, of their particular institution, of their department and of its administrators will have a marked effect on what or how much research academics engage in, irrespective of their personal research interest. In our survey, respondents were asked to indicate where their teaching and research interests lay - mainly in teaching or research, leaning towards teaching or research or in both. Table 2 compares the interests of university and CAE respondents to our SERVAAC study and shows their similarities to those of British academics reported by Halsey (1979).

Table 1: Proportion of time spent on professional activities (%)

Activity	Uni staff		CAE staff	
	SERVAAC (1978)	Williams (1977)	SERVAAC (1978)	Williams (1977)
Teaching	46	61	59	73
Administration	22	14	26	18
Research	30	25	15	9

Table 2: Where do your own teaching and research interests lie?

	SERVAAC respondents (1978)		Halsey respondents (UK, 1976)	
	Uni %	CAE %	Uni %	Polytechnics %
Mainly in research	11	2	17	4
Both, leaning to research	38	11	36	15
Equally in both	26	17	25	21
Both, leaning to teaching	19	39	17	37
Mainly in teaching	6	31	6	24

Consider our SERVAAC data for Australian academics in the first two columns of Table 2. It can be seen that half the university respondents (49 per cent) were research-oriented compared with only about one CAE academic in eight (13 per cent). On the other hand, nearly three-quarters (70 per cent) of CAE respondents compared with only one-quarter (25 per cent) of university staff were teaching-oriented. These figures and those in Table 1 show that, if anything, university academics are failing to find sufficient time to pursue their research interests. There appears to be a greater disparity in interests in research between university and CAE academics than in the amount of time they actually manage to put into that activity.

There is a tendency however for academics in certain CAEs to be more research-oriented than in others. When responses from academics in the main CAE in each state capital are compared with those in all other CAEs in our sample, a clear shift towards a more research-oriented attitude is apparent. Such staff are still far more teaching-oriented than university staff but less so than their colleagues in other CAEs. It should be noted that a similar distinction (which is partly discipline-related) between CAE staff based on the status of their institution can be shown in the Williams data.

Institutional status, whether determined by size of institution or age compared with others in the capital city is not related to any differences in research orientation among university staff however. This reflects a major difference between the two sectors with university staff broadly sharing common attitudes towards their teaching and research roles and CAE staff showing various orientations depending on the status of their institution. (Further work is being carried out in analysing these differences.)

Nearly all university staff (96 per cent) claimed they were engaged in some research or scholarly activity likely to lead to a publication. This is true of only 59 per cent of CAE staff. Almost identical figures (93 and 60 per cent respectively) were found by Halsey in his 1976 study of British academics in universities and polytechnics (Halsey, 1979).

The output of research products also reflects this disparity in interest. The same differences between sectors are apparent in the Australian and British data (from the Williams and Halsey studies respectively) on numbers of articles published (see Table 3). However, Australian academics appear to publish greater numbers of articles than do their British colleagues. Institutional differences for American academics as reported by Fulton and Trow (1975, pp 6,7) are similar to our Australian findings.

Table 3: Number of articles published

Number of articles	Williams study (Australia, 1977) Uni %	CAE %	Halsey study (UK, 1976) Uni %	Polytechnics %
Nil	7	32	12	50
1-2	9	21	14	23
3-4	9	14	13	12
5-10	22	21	20	9
11-20	19	8	16	4
21+	35	5	26	2

Research programmes need financial support. Universities receive greater funding for this purpose than do CAEs. However such funds provide little more than basic support. There are several national research granting bodies such as the Australian Research Grants Scheme as well as a number of private organisations which give substantial support to research in CAEs and universities. CAE staff appear to be far less inclined to apply to such bodies for support. Only 30 per cent of the CAE respondents to our SERVAAC survey did so in the five years prior to the survey, compared with 67 per cent of university respondents. Only 25 per cent of CAE staff had had any of their research projects supported by such bodies during that period compared with 60 per cent of university staff. The same effect by type of CAE was found in proportions applying for such funds and in obtaining them as was found for research orientation above, with the staff in the main CAE in each capital city being more interested in and more successful in getting research support.

Not surprisingly then, university staff are shown to be more research-oriented than their CAE counterparts. In all ways, in the work activities of staff, in their stated interests, in the measures they take to gain support for their research and in the tangible products of their activities, university staff sharply contrast with their counterparts in CAEs.

TEACHING

The nature of the teaching activities undertaken by academics as well as the amount of time spent on them, both vary by sector. These differences arise largely from the emphasis in CAEs on undergraduate rather than postgraduate courses. Thus, twice as many university staff as college respondents were involved in teaching postgraduate courses and in thesis supervision and examining. While nearly half the university staff have examined PhD theses, only a handful of college staff have done so. These findings are consistent with the greater time spent by university staff on research and the nature of university and CAE courses. In 1977, 11.6 per cent of university students were enrolled in postgraduate courses - only 0.9 per cent being in course-work masters programmes (Tertiary Education Commission, 1980a). By contrast, while 7.6 per cent of CAE students were enrolled in some form of postgraduate course, most were doing postgraduate diplomas or some other non-research programmes (Tertiary Education Commission, 1980b).

Our SERVAAC respondents were asked to choose from a list of nine possible goals of undergraduate education the three most important for universities and CAEs. There was almost complete agreement in response from university and CAE teachers on these three goals and on the different order of importance in the two sectors. For university education, development of an understanding of a discipline and development of independence in learning were seen as the most important. Mastery of vocational knowledge and skills and development of individual talents were also supported as goals for university undergraduates, but to a lesser extent. For CAE education, these same four goals were considered the most important but in different order. The vocational goal was regarded as the most important for CAE undergraduates.

The SERVAAC study also shows that college staff are less fixed in their teaching methods than their university counterparts: CAE respondents reported that they use the lecture method less regularly; they are more likely to modify the traditional format when they do lecture; and they are more likely to use a variety of small group teaching techniques. The attitudes of CAE staff on assessment matters are also less traditional than those of university lecturers. The majority of CAE teachers (67 per cent) opposed annual exams compared with just 45 per cent of university staff and slightly more CAE than university staff (55 per cent compared with 42 per cent) supported student involvement in determining assessment policies. CAE staff were more likely to organise their work activities around their students: they recognised and accepted a requirement to relate their courses to contemporary issues; they were more likely to believe their institutions have a responsibility to teach study skills to students (for more detail, see Bowden and Anwyl, 1980); they were also more likely to believe that teachers should be concerned with the emotional and personal development of students, and that they should not concentrate just on gifted students. Slightly greater concern for the emotional and personal development of students and a belief that education would be improved if course work were more relevant to contemporary life also characterised college staff when compared with those from universities in a USA study (Fulton and Trow, 1975, p 26). In our SERVAAC study, university staff also expected a slightly higher weekly workload of their students (43 hours compared with 40 hours expected of CAE students by their teachers).

In general, university staff show a strong sense of their own autonomy. In some but not all respects they also ascribe such autonomy to their students. They are concerned to teach according to their own ideas and to retain control over assessment of students but they expect students to learn independently. In their attitudes to teaching, CAE academics are less concerned with their own autonomy. They are more likely to favour institutional rather than their own individual solutions on matters affecting teaching. Over two-thirds of CAE staff, compared with less than half of their university colleagues, have participated in an in-service course designed to assist them to improve their teaching. We have reported elsewhere (Bowden and Anwyl, 1980) that university staff are more likely to oppose the involvement of tertiary teaching units in curriculum development (77 per cent compared with 56 per cent) or in determination of assessment policies (55 per cent compared with 43 per cent). In a British study, Startup (1979, p 47) has reported that '(university) staff felt that they were individually responsible for course content and they tended to be displeased if (it appeared) that the departmental head was attempting to impose his ideas.'

These findings do not necessarily reflect an indifferent attitude among university academics towards their teaching duties. When asked whether various criteria should be important in determining salary and promotion, 93 per cent of university staff and 96 per cent of CAE staff thought effectiveness as a teacher should be very important. Univ[illegible]ty staff thought that research activity should also be an important criterio[illegible]90 per cent compared with 71 per cent of CAE academics). These attitudes are consistent therefore with a general view among all academics that they ought to be judged on the roles they have - teaching in both sectors, and research in universities more than in CAEs.

Only about one-third of staff in both sectors believed that in 1978 teaching effectiveness was an important criterion in determining salary and promotion. They disagreed with current practice in their institutions. Most university respondents believed research to be the only really important criterion at the time, while CAE academics believed that committee work and seniority were the two most important criteria in their institution.

Halsey (1979) reports views of academics in British universities and polytechnics on the [illegible]lative importance in practice of research and teaching as promotion criteria and the attitudes expressed were similar to those of respondents in our SERVAAC study. A different emphasis is found in a USA study (Fulton and Trow, 1975, p 27) where just over half the university respondents and the vast majority of college respondents agreed that teaching effectiveness, not publication, should be the primary criterion of promotion of faculty.

Our survey asked some other questions concerned with respondents' professional activities. University staff were more likely than CAE staff to have lectured outside their own university - twice as likely to have lectured at a university and just as likely to have lectured at a CAE. Most university respondents had presented a paper at a conference within Australia (88 per cent compared with 53 per cent of CAE respondents); nearly two-thirds of university staff but less than one-quarter of CAE staff had given a conference paper overseas; the proportions of university staff who had served as a referee for a journal article or been a journal editor were 72 and 33 per cent respectively - the corresponding proportions for CAE staff were 16 and 14 per cent; 20 per cent of university staff had served on a course accreditating body and 48 per cent had served as consultant to government or business - 12 per cent and 40 per cent were the corresponding figures for CAE staff.

QUALIFICATIONS AND LEVEL OF APPOINTMENT

The qualifications of university staff should reflect their greater research role as well as their involvement in teaching and supervising research students in postgraduate courses. Nearly two-thirds of Australian university academics in our SERVAAC sample but only about one-sixth of college academics have obtained a doctorate. Furthermore, the first qualification of nearly all university staff in our sample is a degree or honours degree. More than one-third of CAE staff in our sample had a diploma or less as their first qualification. These differences in qualifications are to be expected given the differing functions and origins of institutions in the two sectors.

There are some sector differences among USA academics of a similar kind but they are not as marked. More than half the university respondents (Fulton and Trow, 1975, pp 6,7) had a PhD but this was true of only those college staff in four-year colleges of high status. There was a variation among different college types in our SERVAAC study but not to such a great extent. The proportion of Australian college academics with PhD qualifications was greatest (23 per cent) in the group of institutions comprising the oldest CAE in each capital city.

Not surprisingly, since they are already highly qualified, a smaller proportion of university staff (13 per cent) than college staff (37 per cent) were enrolled in 1978 in a degree or diploma course. The majority (70 per cent) of those university staff who were enrolled, were studying in a doctoral programme while the college staff enrolment was spread across diploma, bachelor's, master's (45 per cent) and doctoral courses (24 per cent). Only a small proportion of university staff felt under strong pressure (7 per cent) or indeed any pressure (15 per cent) to be enrolled. Considerably more CAE staff (17 per cent and 42 per cent respectively) felt varying degrees of pressure to study. The major source of this pressure where it existed was personal ambition in both sectors (43 per cent), followed by a need to keep up-to-date in their field for CAE respondents (26 per cent compared with 16 per cent for university staff). University staff were more likely (21 per cent compared with 15 per cent) than CAE staff to specify the need to master a new field as the second source of pressure to study for a qualification. Pressure from the employing institution was the least important for both sectors (about 14 per cent).

Not only have university staff higher formal qualifications, their level of appointment is also generally higher than that of college staff. Table 4 shows that, of university respondents holding ranks of lecturer and above, more than a quarter had appointments above senior lecturer level - compared with less than one-tenth of comparable college staff. As well, more than a third of university academics but little over a quarter of college academics were senior lecturers. Hence academics with the rank of lecturer form nearly two-thirds of the college staff but only about one-third of staff in universities. Even so, the rank of staff in all Australian institutions appear to be higher than those in British universities and polytechnics. Halsey (1979) found that two-thirds of staff in universities and about ninety per cent of polytechnic staff had not progressed beyond the lecturer rank. These international differences may be offset to some extent by the overlapping salary scales in the United Kingdom compared with the precise hierarchy in Australian levels of appointment and salaries.

The differences between the two types of Australian institution must be due, at least in part, to the fact that the colleges of advanced education have only recently undergone rapid growth. While the average age of college staff and their length of service in their current employment are similar to those of university staff, college academics are more likely than their university counterparts to have come from some other (non-tertiary education) type of employment - probably to a position at a junior rank while expansion of the CAE system was taking place in recent decades.

Table 4: Level of appointment*

Rank	Uni staff (%)			CAE staff (%)		
	Williams study (1977)	SERVAAC study (1978)	ABS data (1978)	Williams study (1977)	SERVAAC study (1978)	ABS data (1978)
Professor	14.9	13.2	12.8	3.7	3.1	8.9
Associate Professor	16.1	16.1	13.8	7.5	6.2	
Senior Lecturer	37.3	43.1	37.8	26.1	28.0	24.2
Lecturer	31.3	27.7	35.6	62.4	62.7	66.9

* The SERVAAC study, compared with the 1978 ABS statistics, is biased away from the lecturer rank. Our sample was drawn from 1977 handbooks while the Williams samples were drawn by the individual institutions using up-to-date staffing lists. Even so there is an indication of bias away from lecturing staff in the Williams data also. The same bias was found in the Halsey and Trow (1971) study of British academics. They suggested that staff with the rank of lecturer are in the highest turnover situation and are the most difficult to locate.

Table 5 shows that while just over half (55 per cent) of the CAE respondents to our SERVAAC survey were in their first academic job, about half the university staff (47 per cent) were then in their third such employment. CAE staff had tended to move from lower professional occupations, through upper professional jobs to their present fairly junior academic rank. University academics, on the other hand, were typically in their third or fourth academic job, had obtained post-graduate qualifications and gained promotion to more senior academic ranks.

Added to this is the recent reorganisation (Academic Salaries Tribunal, 1976) of salary scales for college staff with a greater number of levels within both the lecturer and senior lecturer salary scales and a promotion bar in the middle of each scale. These extra barriers to promotion would have been been too recent to have had a great effect on the distribution of ranks (in our 1978 study) referred to earlier but will serve in the future to maintain the disparity in ranks which currently exists between university and college staff.

Table 5: Previous employment

Type of employment	% of Uni staff (N=816)			% of CAE staff (N=908)		
	Last job	2nd last job	3rd last job	Last job	2nd last job	3rd last job
Academic	74	47	24	45	18	10
Upper professional	13	20	18	25	28	16
Lower professional	1	5	4	16	21	16
Other	1	3	5	2	6	6

TENURE

More than four-fifths of both university and CAE academics believed that both universities and CAEs should offer limited-tenure positions. However, there was a wide spread in the suggested proportions that such appointments should be in the overall staffing of their institutions. About half advocated that such positions should be ideally no more than 10 per cent in their institutions. Another one-fifth of university staff and one-quarter of CAE staff would take this figure to 20 per cent. This leaves about three-tenths who supported even higher proportions of limited-tenure appointments.

The major reasons in favour of limited-tenure appointments were that they provide time for making judgements about a new academic and that new ideas are brought into departments. Giving the institution flexibility in times of change, meeting temporary departmental needs and providing experience for young graduates were also regarded as important, although the last of these was not of as great a concern to CAE respondents.

Those who opposed limited-tenure cited as reasons the lack of accumulation of experience with repeated junior appointments, the effect of career anxiety on performance, the fact that probationary periods exist for continuing appointments anyway, and the risk to free expression by academics. CAE respondents also mentioned the lack of interest in departmental and institutional issues by temporary employees and the emphasis on short-term projects as other reasons against limited-tenure.

Some alternative ways of creating openings in academic life were suggested to respondents. Ninety six per cent of all respondents supported optional early retirement schemes. Eighty nine per cent of university staff and 92 per cent of CAE respondents also supported optional fractional appointment schemes. On the other hand, only just over 10 per cent of university respondents and just under 20 per cent of CAE staff supported the use of immigration laws to prevent foreign academics taking jobs at the expense of suitable Australian academics. Seventy five per cent of university academics and 63 per cent of those in CAEs opposed even giving preference to Australian applicants.

When respondents were asked to comment on various policies towards staff made redundant by a decline in student numbers, early retirement and fractional appointments were the schemes most supported. Retraining and transfer to other work areas were also supported, although more by CAE staff and for CAEs. Very few respondents supported dismissal of those academics made redundant.

STUDY LEAVE

University and CAE staff agreed that the main purpose of study leave varies between the sectors. They nominated research as the main purpose for university study leave and, as a second purpose, university staff suggested visiting relevant departments elsewhere while CAE staff believed relevant professional or work experience to be an appropriate purpose. For CAE study leave, both groups cited this last purpose as the most important.

While there was considerable agreement between and within the sectors as to the purpose of study leave, there was some disagreement about which staff should be eligible for study leave. While nearly all respondents believed that tenured academics (lecturer and above) in universities should be eligible, only about half believed that tenured academics (below lecturer) should get study leave. Support for the eligibility of the two equivalent untenured categories of staff diminished further. However, while nearly a third of CAE respondents supported study leave for university administrative staff, less than a fifth of university respondents did so.

This difference between sectors carries over to CAE study leave with the equivalent proportions supporting eligibility of CAE administrative staff being one-third, and less than one-seventh, respectively. While most CAE respondents supported study leave for tenured lecturers and above in the CAE sector, only two-thirds of university respondents did so. Similarly there were differences in attitude to the eligibility of tenured staff below lecturer with two-thirds of CAE respondents but only two-fifths of university respondents in support. The sector differences continue through the diminishing support for study leave for untenured academics.

About 70 per cent of CAE staff believed that study leave should be a right for all eligible staff. A similar proportion of university respondents agreed with this for eligible university staff, but about half the university respondents believed that eligible staff in CAEs should have study leave available only on a competitive basis.

These results are an example of the general comment made in the introduction that university and college academics differ most of all when they reflect on each other.

There was overwhelming support for a choice as to whether study leave is taken in Australia or overseas. Sixty seven per cent of university staff and 86 per cent of CAE staff gave that view on university study leave and over four-fifths of all staff supported that choice for CAE study leave. In addition, staff from both sectors believed that 13 teaching weeks on study leave in any three year period is either about right or too low.

ROLE SATISFACTION AND ATTITUDES TO INSTITUTION

Earlier sections of this paper have outlined the major differences between staff at universities and CAEs in the work activities which engage them. Given there are role differences, however, it is useful to ask just how satisfied academic staff are with their particular roles. Are they looking forward to obtaining a position in another institution, in another sector perhaps, or even outside the tertiary education field? What aspects of their work environment concern them? How do they view the quality of their institution, its staff, its students, the campus and its facilities? Are they satisfied with the way their institution and its activities are administered? Do any of these attitudes vary by sector? Our SERVAAC study tested most of these questions.

University staff were significantly more satisfied with the institution in which they currently worked than were CAE staff (about one-quarter of CAE staff were dissatisfied compared with about one in seven university academics). More than half the university respondents (53 per cent) would have liked to be at their present institution in five years time, with or without promotion. This affinity for their current institution was less prevalent among CAE staff, only 42 per cent of whom would want to remain there for five years or more.

Attitudes towards the sectors show even more striking differences. While those who would like to move from their current institution in the next five years to go to another university or CAE formed about 25 per cent of both university and CAE respondents, 98 per cent of the university staff among them would have liked to be at another university while only 25 per cent of the CAE staff in this group would have liked to go to another CAE, i.e. three-quarters of them wished to change sectors and move to a university.

These data apply only to the one-quarter of staff who wished to move however. The university/CAE hierarchy can be examined further by considering responses to a question in which all respondents were asked to assume they were leaving their current institution. In that circumstance, they were asked to rank the attractiveness of a position in a college, a university, the public service or industry and commerce. Virtually all university staff (92 per cent) preferred a university position as did nearly half of the CAE respondents (45 per cent). A smaller proportion of CAE staff (40 per cent) preferred a position in another CAE. This confirms the tendency for CAE staff to be seeking employment in universities but not the reverse.

Respondents were also asked to indicate the three critical factors (from a list of 13) in any decision by them to join another tertiary institution. Reflecting the differing sector orientations, university staff placed research opportunities first, followed by staff quality and tenure. Tenure was of most importance to CAE staff followed by quality of staff, and salary.

Since CAE staff appeared to be less satisfied with their working environment than did university staff, it is well to ask just what particular features displeased them. There were sector differences in academics' perception of the level of qualifications of their institution's staff and the quality of its graduate teaching. In both these variables, more university staff considered their own institution to be above average for their sector than did CAE staff. This represents a perception by CAE staff of evenness across the institutions in the CAE sector which is not evident in universities. Within the university sector, there is a strong trend with institutional size, with staff at the largest universities having the most favourable view of the quality of staffing and graduate teaching.

Not surprisingly, university staff were also more satisfied than CAE staff with student union facilities, the planning and appearance of the campus, staff accommodation and research resources in their institutions. CAE staff were more satisfied with the position of their campus in relation to the centre of town and with transport to the campus. Satisfaction with campus position relates fairly well to actual locations. CAE staff were less satisfied than university staff with the efficiency of their institution's administration.

ATTITUDES TO FUNDING

If there were to be a severe financial cut-back in their institutions, university staff would cut least in the areas of library, laboratories, research, study leave, post-graduate student numbers and financial assistance to students. CAE staff would resist cuts in funds to support teaching and cuts in undergraduate student numbers. These different attitudes emphasise the differing teaching-research orientations already discussed. The greatest cuts should be in funds for guest scholars in the view of both staff groups.

Over three-quarters of CAE staff thought that their departments should seek income by conducting non-credit courses for fees or by undertaking contract research. A slightly smaller proportion of university staff agreed with respect to contract research but only half thought their departments should conduct non-credit courses for income.

Staff in both sectors were generally in favour of a special fund to finance innovation but a higher proportion of CAE than university staff thought so. Only about two-fifths were finding innovation hard and for these staff one of the reasons was either a heavy personal teaching or research load. As a second reason, university staff were more likely to find conservative colleagues a barrier. CAE staff referred to administrative factors being a barrier to innovation which is perhaps not surprising given the elaborate internal and external accreditation procedures in the college system.

INSTITUTIONAL GOVERNMENT AND INSTITUTIONAL DEMOCRACY

Ninety per cent of both university and CAE staff thought their institution should be governed by democratic processes. However just over three-fifths of university staff and only a little more than half of CAE staff believed that condition existed in 1978. Most agreed that a dean or department head has a responsibility primarily to represent his area of responsibility to the central administration and not the reverse.

Despite this agreement on the need for staff participation, university staff were less likely than CAE staff to have active involvement in their academic staff association or to think that their association should be represented on key committees of the institution. The latter finding is perhaps consistent with the already-noted sense of autonomy and self-determination of university staff and the closer link that some CAE staff may have, by virtue of their previous work experience, with teacher unions.

The observation by their staff that CAEs are run somewhat undemocratically is shown in the rating of the influence of various groups on academic matters. In the opinion of CAE staff, the Council of the CAE institution and the institution's director or principal have more influence on staff appointments, staff promotions and on budgetary matters than was reported by staff in universities. Surprisingly, CAE staff were more likely than university staff on these same decision areas to say that this should be so. It might have been expected that, with a greater sympathy for union participation, the CAE staff would oppose such decision-making processes. It appears rather that

the difference between university and CAE staff in desire for self-determination (which was noted earlier) is showing itself again with CAE staff being concerned for institutional rather than individual decision-making.

Both CAE and university staff agreed that in 1978 students had little or no role in decisions about course content, assessment, admissions, student discipline, appointments and promotions of teaching staff, budgets and planning. However there was disagreement as to whether they should. CAE staff were much more inclined to think so.

Again on general issues about protests, demonstrations and other student political action, the views of university and CAE staff are remarkably close. They strongly agreed that teachers should not cancel classes to allow attendance at demonstrations, but in both sectors opinion as to whether teachers should postpone classes on such occasions was spread across the entire spectrum. Similarly, there was no consensus as to whether joining students in demonstrations about institutional affairs is unprofessional (51 per cent supported the statement, 30 per cent opposed) but slightly more staff believed that joining students in this way about national affairs is not unprofessional (62 per cent supported the statement, 20 per cent opposed).

Staff of both sectors disagreed with a statement that 'student demonstrations have no place on campus' and in fact believed that universities and CAEs should promote their students' right to freedom of action. However they believed that those students who occupy administrative offices should be suspended. They did not agree that police should never be brought onto campus and did not think that student body funds should be used to bail out arrested students or for the promotion of particular political views.

In reality these views are fairly conservative, admitting to the rights of students to freedom of action but with a strong view that they must accept the consequences of their actions. Teachers see only limited involvement on their own part.

ACCESS TO TERTIARY EDUCATION

To ascertain views on a wide variety of access issues a series of questions was asked about financial support systems; the effect of present selection systems on particular social groups; possible changes to selection systems; transfer between tertiary sectors; policies on deferral, drop-out, part-time and external studies; open tertiary institutions; the effect of expansion on the quality of students; the desirability of further growth in enrolments and tertiary expenditure; and the distribution between sectors of any further enrolment growth.

College and university academics have similar views on financial support for students. There was strong support for free tertiary education (67 per cent for, 23 per cent against, remainder neutral). There was less support for means-test free living allowances for all students (48 per cent for, 35 per cent against). Academics were divided in their view of alternative schemes such as means-tested tuition fees (43 per cent for , 46 per cent against) and on loan schemes with 35 per cent agreeing that they are better than free

tertiary education with living allowances; 47 per cent disagreed. Forty four per cent believed that means-tested schemes should be avoided because of the problems they create; 35 per cent disagreed. Generally there was support for assistance schemes of one sort or another with a stronger view that tertiary education should be free.

On selection issues both groups showed strong support for qualified school leavers being permitted to enter a tertiary institution of their choice, subject to adequate resources being available (68 per cent for, 22 per cent against), and for motivation and application being considered, in addition to examination results, in selection criteria (67 per cent for, 10 per cent against). Both groups were strongly against CAEs admitting all adults regardless of educational experience (20 per cent for, 66 per cent against), and against the use of a ballot in selection to reduce inequalities in social group participation (5 per cent for, 78 per cent against).

Such differences as there were between the groups were simply in the degree of support or opposition; the tendency of opinion was similar. University academics were more strongly opposed than CAE academics to removing entry qualifications to institutions, reserving places for social groups in order to match in institutions their proportionate size in the general community, and using a ballot in selection to reduce social group inequalities. College as against university academics were more strongly against admission of all adults to CAEs regardless of qualifications, clearly not wanting to bear the brunt of open entry proposals. They were stronger in the view that present selection procedures favour top socio-economic groups, that some students capable of success cannot gain tertiary entry, that admission rules should permit easier entry for disadvantaged students, and that motivation and application, as well as examination results, should be included in selection criteria. These differences noted, what is quite clear in this set of propositions is that whatever the unease university and college academics feel about social group participation, they do not favour radical changes to present admission procedures - easier rules (unspecified) for the disadvantaged are just tolerable; ballots and reserved places are strongly rejected.

The ballot proposal, which has at times attracted interest in some European countries, and was for some time supported in Victoria by a secondary school teachers' organisation, was pursued in a number of questions. While over 95 per cent did not favour a ballot system for all tertiary selection, only 67 per cent objected to a ballot for selecting students whose marks are clustered just above or just below the cut-off point.

Easier student transfer between institutions was supported by about two-thirds or more of both groups, with one exception - a majority (57 per cent) of university staff opposed easing transfer between CAEs and universities whereas 78 per cent of CAE respondents favoured this. College academics were generally more inclined than university respondents to seek easier tranfer as against retention of the status quo.

Both groups supported easy re-entry for students who defer, but not for drop-outs. Ready availability of external studies in most university and CAE subjects was supported, as was its availability to people within commuting distance: a decade ago people living near institutions would probably have been expected to find a way of attending. College academics were much

stronger in their support for ready availability of external studies. More CAE respondents (45 per cent) opposed the view that it was an inferior form of study than supported it (33 per cent). The exact reverse was true of university respondents. University respondents did not take that negative view of part-time studies, but again college respondents were more strongly supportive. Part-time enrolment is clearly a far more acceptable form of study than external studies. In addition, both groups had similar views on the benefit of deferral by students. Only 9 per cent thought that students do not benefit while 48 per cent believed students do benefit from deferral.

On the question of open tertiary education 26 per cent of university respondents and 15 per cent of college respondents opposed establishment of any kind of open tertiary institution. Both groups gave most support to establishment of a single open multi-level institution, college more strongly than university respondents. There was not much support for the establishment of only an open university or only an open CAE, or for one of each maintaining a separate identity.

Responses from both groups on the effect of a decade of expansion on student quality were similar to each other in each of the three areas - cognitive skills, written communication and application. Table 6 shows the responses of all respondents combined. About half the respondents believed that expansion of the tertiary education system has resulted in a deterioration in cognitive skills and application by students but about half see these qualities to have been unaffected by the expansion. Many more believed that written communication skills have deteriorated in the aftermath of the expansion.

Respondents were asked their views on variation of the proportion of the age group undertaking tertiary education, given that appropriate resources were available. Twenty five per cent of university respondents favoured a lower proportion compared with 13 per cent of CAE respondents. Fifty three per cent of CAE and 43 per cent of university respondents favoured a higher proportion.

Both groups thought the nation could afford expansion of tertiary education (university, CAE, and Technical and Further Education [TAFE]), but most thought governments would not be prepared to pay for it. Neither group thought availability of well-qualified staff would be a problem. Both CAE and university respondents supported more expenditure on tertiary education and gave similar importance to the reasons for and against. Neither group gave high priority to students' personal development or social justice when supporting more expenditure - most favoured were national arguments i.e. in the national interest to fully develop its talent, to raise the intellectual level of the community, and to improve the quality of national life.

Table 6: Effect of tertiary education expansion on student quality: combined university and CAE staff responses

	Improved %	Unchanged %	Deteriorated %
Cognitive skills	10	49	41
Written communication	4	31	65
Application	10	48	42

Views were sought on support for projections showing more than half of total university-CAE enrolments being in CAEs. Ninety one per cent of CAE respondents favoured this compared with 71 per cent of university respondents. University respondents in favour gave as their main reasons - distortion of university purposes and standards by mass enrolments, Australia's future depends more on vocationally-oriented courses offered by colleges, and such a provision matches the distribution of ability. College responses emphasised the vocational arguments even more but not the other two - they placed more emphasis on the proposed distribution seeming to match student demand and on the research role for only a minority of students. Almost half the university respondents opposing the proposed distribution gave support to the view that college standards were too undemanding for the majority of students to aim at, which was a reason offered by few college respondents. Opponents in both groups gave most support to the view that it was socially undesirable for universities to restrict enrolments to a minority of students. There are clear differences here between university and college respondents on reasons which affect their views of one another, and these are seen again in the next section which looks at sectoral role differentiation.

The last question in this section sought views on how student numbers in universities, CAEs and TAFE should be varied over the decade from 1978. On university numbers, both groups gave almost identical responses - just over half supporting the status quo, 20 per cent a decrease, 20 per cent an increase of about one-quarter and the remainder supporting larger increases. On TAFE numbers there was also a consensus - nearly 80 per cent of both groups favouring an increase. In fact, 22 per cent supported an increase in numbers by half over 1978 figures and 17 per cent supported a doubling of TAFE enrolments. The responses on college enrolments showed clear university-college differences - college staff were more strongly in favour of CAE numbers increasing, though a majority of both groups supported an increase.

What emerges from this comparative analysis of responses to questions relating to access issues is that the interest is more on the positions taken on the various issues, and on the varying strength of those positions, than on any differences in the position of the two groups of academics. The group differences sharpen most where they are asked to reflect on one another's sector.

ROLE OF UNIVERSITIES AND CAE'S

The divergence of view of university and college academics was sharpest in this section of the questionnaire. On only one role were their views very close: that colleges should offer a wide range of non-credit courses, which was supported by just over half of both groups. This is hardly a central issue in the role of tertiary institutions!

On some of a series of questions which sought views on the courses and client groups appropriate to CAEs, opinions of the groups moved in opposite directions. A majority of college respondents opposed any limitation of the CAEs to vocational education clearly related to the needs of industry and commerce, and believed they should not be restrained from offering courses

available at universities and TAFE colleges. They did not believe that CAEs should concentrate on para-professional and middle level technician training, and supported CAEs offering postgraduate degrees by thesis and also by course-work. University respondents took the opposite view with about equal strength, except in the case of postgraduate thesis degrees where the strength of opposition was greater: 79 per cent of university respondents disagreed that CAEs had such a role (including 38 per cent expressing strong disagreement) compared with support for such a role by only 55 per cent of CAE respondents.

Where opinion moved in a similar direction college respondents more strongly supported the view that CAEs should offer a wide range of courses at degree and sub-degree levels (83 versus 50 per cent) and were much less resistant to CAEs teaching, as agents, parts of courses for universities and TAFE institutions. University respondents were slightly more opposed to mature-age students being a special responsibility of CAEs, but less opposed to CAEs having this role for part-time and external students.

On questions about public status, accreditation, academic standards, conditions of employment, salary scales and staff-student ratios the opinions of the two groups generally moved in opposite directions. Whilst about 80 per cent of both groups felt universities and CAEs were equal in public status, 80 per cent of college respondents but only 30 per cent of university respondents thought they should be; 56 per cent of university respondents opposed equality of status. College respondents were sceptical about whether many university courses would get past an independent accrediting authority whilst university respondents felt degree level work in colleges was rarely as high in standard as in universities. University respondents believed universities should have better staff-student ratios, a different salary scale and different conditions of employment; college respondents strongly opposed these views. Both groups were opposed to colleges accrediting their own courses but CAE staff were more united in their opposition than university respondents - 67 per cent and 52 per cent of college respondents disagreed that all and some colleges, respectively, should be allowed to accredit their own courses. This opposition is interesting and deserves further investigation. It is consistent with the tendency noted earlier for CAE staff to prefer systemic rather than individual solutions; this was apparent on issues of academic autonomy and the role of various levels of the institution's hierarchy in decision-making.

On the question of the best institution for primary and secondary teacher training both groups saw primary training as a college role, preferably in multi-purpose colleges. University respondents were divided about secondary training, about half seeing it as a university and half as a college role, whereas of college respondents only 15 per cent saw it as university role. A substantial minority (35 per cent) of both groups supported single purpose CAEs for primary, but less (21 per cent) for secondary training.

Both groups believed universities and CAEs should be clearly different types of institutions, but university support was stronger (95 versus 74 per cent). University respondents believed the main differentiation should be the research responsibility of universities, the relative emphasis on post-graduate and undergraduate training and the stronger vocational emphasis in CAEs, in that order. CAE respondents emphasised the same characteristics but placed vocational emphasis first, and the relative role of post-graduate

and undergraduate training third. College staff placed greater emphasis on intensive teaching of students in colleges as fourth out of eight different variables whereas university staff placed this last. University staff placed some emphasis on different qualifications required for academic staff, lower entrance requirements for CAEs, CAEs should not give degrees, and more favourable staff/student ratios but these possible distinguishing characteristics had very little appeal to college staff.

When asked if institutions in one sector should be permitted to move to another sector 60 per cent of college respondents agreed and 71 per cent of university respondents opposed. On amalgamation of institutions across sectors 58 per cent of university staff opposed and 78 per cent of college staff supported universities amalgamating with CAEs. Amalgamation of CAEs with TAFE colleges was supported was 81 per cent and 70 per cent of university and college respondent respectively. College staff opted more clearly for amalgamation with universities than TAFE colleges, whilst university staff preferred the opposite for CAEs. When asked for factors important to them in amalgamations both groups gave most importance to the need to protect the interests of both institutions. University respondents gave almost equal importance to maintenance of quality of staff and the need to adjust courses in a suitable way. For CAE respondents, the need to preserve a variety of choice for students and suitable adjustment of courses were at the second level of importance.

More college than university respondents supported major changes in the structure of post-secondary education (52 versus 43 per cent), but discontent with the status quo was not high with either group. University respondents supporting change, along with college respondents, gave emphasis to more multi-level (community colleges) and multi-purpose institutions, but college staff did not support the university staff's desire for more sector differentiation, and more emphasis on a hierarchy of sectors.

An examination of opinions on the role of universities and CAEs clearly demonstrates that similarities in view frequent elsewhere in the questionnaire do not extend to each group's view of the other sector.

TERTIARY INSTITUTIONS AND THE STATE

University respondents differed sharply from college staff in their opinion on whether universities should be allowed a more independent status than CAEs in their relationship with national and state co-ordinating bodies: 81 per cent favoured this as against college staff's 86 per cent against. Neither group supported a greater freedom for CAEs than TAFE institutions with greater resistance coming from college respondents - consistent with a variety of earlier responses de-emphasising inter-sector differences and hierarchy.

Significant proportions of both groups refrained from commenting on the adequacy of the other group's effort to prevent erosion of their freedom by the State, but those who commented on the effort of their own institutions felt strongly that not enough effort was being made.

Both groups had similar views on the extent to which national and state co-ordinating agencies keep a balance between the interest of the state and the freedom of the institutions, and on the role of co-ordinating agencies to moderate the influence of political party values or liaisons. In fact nearly half disagreed (and less than one-fifth agreed) that such co-ordinating bodies provide such a balance. Both agreed that the autonomy of universities and CAEs was steadily declining, as was the freedom of the individual academic, and that most academics do not exercise the freedoms they have, with university emphasis being stronger on the first of these.

GENERAL EDUCATIONAL ISSUES

On priority areas for additional education funds, both groups placed TAFE first, themselves second, and then placed each other last behind primary and secondary education. University preferences were less bunched than college preferences.

Responses were spread but both groups tended to believe that it is not too costly to remove educational inequalities between individuals; a larger proportion believed that at least a substantial reduction of these inequalities is possible. They did not see genetic factors preventing a major reduction of educational equalities, and were equally sceptical about the likelihood of Australia making a serious attempt to reduce them.

There was a spread of opinions about emphasis being placed on equal outcomes as well as equal access to education, with a tendency for university staff to oppose and college staff to support such emphasis.

On community participation in university decision-making, a majority (62 per cent) of university staff favoured the same and 24 per cent favoured more participation. Forty eight per cent of CAE staff supported more and 46 per cent the same level of community participation. On such participation in CAE and TAFE decision-making, there was not this difference of view - the need for a community relationship is less disputed here. University staff were more inclined to see community participation causing serious problems (65 versus 51 per cent), but both agreed that the main problems would be danger of interference by pressure groups and undue complication of decision-making.

SOCIAL ISSUES

The main policy areas for priority for government expenditure in 1978 were sought from a list of twenty. Both groups emphasised the same four, in order, projects creating employment, education, research and development of energy resources, and research and development of industry. Remarkably their views were almost identical throughout the list with lowest preference being given for conservation of environment, law enforcement, urban renewal, overseas aid, and art and culture (the first of these being last).

There was virtually no difference expressed in opinions among staff on a wide range of social issues. They opposed reduction of income differentials (62 per cent), agreed that our society discriminates against women (68 per cent) and racial groups (79 per cent), agreed that unions should have the right to strike (80 per cent) and that worker participation in management is required (81 per cent). Opinion was more divided on two issues: whether governments should give greater emphasis to individual freedom than social planning, and taxes should be low so individuals have control over their earnings, though in both cases the majority gave priority to the state over the individual.

PUBLIC DEBATE

Group views were similar on the influence academics have in shaping debate on political and social matters - about 60 per cent giving academics credit for some degree of influence. About 60 per cent of university respondents (compared with 52 per cent of CAE respondents) had contributed to public debate, with a greater tendency than CAE staff to write articles for the press, write publications and speak on radio and television. How much this reflects opportunity as against choice is not clear.

A slight majority (56 per cent) of college respondents thought it ethical for academics to give their professional identity even when commenting on subjects not directly related to their field; a similar majority (56 per cent) of university respondents opposed this. Both groups opposed universities and CAEs individually and collectively taking up positions on national issues, university staff objecting more strongly (65 to 53 per cent).

DEMOGRAPHIC AND PERSONAL DATA

There was no significant difference in the way both groups placed themselves on the political spectrum, or on how they usually vote or would have voted in late 1978. Considerably more than half normally vote for parties other than the Liberal and National Party coalition.

The gender distribution of university and college respondents was different - 12 per cent of university and 21 per cent of college respondents were women. University respondents tended to be older than those in CAEs (average age 42.2 compared with 40.6 years) with a correspondingly slightly narrower age range. The CAE group had about 30 per cent of staff under 35 years compared with 21 per cent of university respondents. Only 6 per cent of CAE respondents were 55 or over compared with 11 per cent from universities.

There was no significant difference in the proportion of both groups born in capital cities. However universities had more staff (40 per cent) born overseas than did the CAEs (32 per cent). A bigger proportion of college respondents were born in Victoria reflecting perhaps the size and number of CAEs in Victoria and their influence on the CAE sector.

Differences in years resident in Australia of foreign born,and present nationality, religious upbringing and national status were significant. Fewer university respondents (65 versus 69 per cent) had taken their secondary education at government schools and Roman Catholic schools (10 versus 13 per cent) and more (25 versus 18 per cent) at non-Catholic independent schools.

Differences in academic qualifications were apparent. University respondents were more likely to have a degree rather than a diploma as their first qualification (88 versus 64 per cent), and to have taken their degree in the 1960s rather than the 1970s at a very old large university, or capital city university, or a British university, and less likely to have studied at a central CAE. Their second degree was more likely to be a Master's degree or PhD (67 versus 30 per cent), again in the 1960s as against the 1970s and at the same kind of institution. Third qualifications were more likely to be PhD's and Master's degrees (81 versus 50 per cent), in the 1960s or earlier rather than the 1970s, with 39 per cent of them being achieved at universities abroad (compared with 21 per cent of college respondents). Fourth qualifications showed similar trends.

University respondents were less likely to have worked in the private sector, though the proportion with this experience over their last three appointments was not high - less than 12 per cent. University respondents previous positions were more likely to have been academic and more of them abroad, principally in Britain and America.

University respondents were more likely to have fathers with a bachelor's degree or above, and with upper or lower professional occupations. Their mothers were also more likely to come from these groups. Their siblings shared these characteristics. Their spouses were more likely to have a bachelor's degree or above but there was no sector difference in occupational level of spouses. No significant differences emerged from analysis of their children's educational qualifications and occupations.

FINAL COMMENT

CAEs were created as a result of government policy post-1964. They inherited many staff from former technical colleges and teachers' colleges. The expansion of both universities and CAEs up to 1975 provided opportunities for academics to move between the two sectors. The decline in job opportunities since 1975 has reduced this mobility and has probably encouraged many well-qualified applicants for university positions to take positions in CAEs instead. However it is doubtful that sufficient changes in staffing have occurred to change the picture of staff we have derived from our 1978 data.

What these data indicate is that there are clear and important differences between academics in the two sectors of higher education, differences in some personal characteristics and in values held. Universities and CAEs pursue staffing policies in line with their institutional mission and some of the differences we observe flow from that. Some derive from shared institutional ideologies and others from the different preferred styles and value systems of individuals. There is also likely to be interaction among these factors.

NOTES

(1) The terms 'CAE' and 'college' are used interchangeably in this paper.
(2) The terms 'academics' and 'staff' are used interchangeably with 'respondents' to make the text more readable.

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A Review of Research on Lecturing

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ABSTRACT
Research on lecturing has been addressed to two main issues, the effectiveness of lecturing in comparison with other teaching methods and the differences between more effective and less effective lecturing. This article summarizes conclusions reached by earlier reviewers concerning the first issue. It then presents and discusses research on specific aspects of lecturing in relation to the second issue. These specific aspects concern content coverage, clarity, expressiveness and management. Research on syntheses of specific aspects of lecturing is also discussed. The article concludes with suggestions for future research. One suggestion is that more attention be given to the study of lecturing in field rather than experimental settings.

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Lecturing as a form of teaching in tertiary education has a long history, and has hardly yielded its pride of place in present times. Lecturing as a method of teaching is essentially a solo performance by a person engaging in extended one-way verbal communication with an audience, with the intention that the latter learn more about a substantive topic. Conceptually, lecturing is different from other types of extended solo verbal performances, such as story telling and preaching, which have more to do with entertaining and exhorting than with enhancing substantive learning. As long ago as 1923, Jones expressed disappointment at the amount students learned from lectures, but at the same time demonstrated that learning did occur. Since then a large body of research has been devoted to the effectiveness of lecturing in higher education.

Two main questions have stimulated research on lecturing: Is lecturing as effective as alternative teaching methods? and what are the differences between more effective and less effective lecturing? Attempts to answer the first question have usually involved experiments in which one teaching method, lecturing, has been compared with another teaching method, most often discussions. This research tradition is referred to as 'comparative methods' research. Research concerned with the second question has rarely included the analysis of naturally occurring lectures, with subsequent explorations of effectiveness, such as class achievement or student evaluations of the lecturing. Mostly, attempts to answer the second question have involved studies in which variations in lecturing style or behaviour have been manipulated experimentally and their effects observed.

Comparative methods experiments are intended to assist teachers in choosing appropriate teaching methods, given certain types of students, objectives, content, resources, and so on. Research on relationships between variations in lecturing and outcome variables aims to assist teachers to improve their lecturing by informing them about more effective and less effective aspects of lecturing.

LECTURING COMPARED WITH OTHER METHODS

Problems confronting researchers wanting to study the relative effectiveness of different teaching methods include ensuring that the methods are internally homogeneous and externally different from one another. Lecturing is seldom defined, and much less often described in comparative methods studies. Instead, it is assumed that, intuitively, everyone knows and agrees upon the meaning of the term 'lecture' and that lectures are by and large similar to each other, and together different from other teaching methods which are themselves homogeneous. If any one of these assumptions is unjustified, the task of demonstrating that the methods differ in their effectiveness will be more difficult.

Another problem about comparative methods experiments is the requirement that criteria of effectiveness must be fair to both methods. Attempts to adhere to this principle have resulted in such practices as the administration of criterion achievement tests containing only items common to sessions taught by both methods. This immediately denies either method the opportunity of having its superiority in achieving special learning objectives demonstrated. Lectures and discussions might be equally effective in assisting students to learn about apples, though discussions might be especially suitable when it comes to oranges, and lectures superior for learning about bananas. If

criterion tests include only items about apples, nothing can be learnt about the particular strengths of each method. Of course, there is also a risk that achievement tests are unfair in the sense that they permit the special area of superiority of one method but not the other to be demonstrated, for example, by measuring only learning about oranges, and possibly apples, but excluding bananas.

Other pitfalls in comparative methods investigations are discussed by McKeachie (1963) and include the 'Hawthorne effect', where emotional reactions of staff and students involved with novel methods can cloud the genuine effects of the method. There are also the problems of eliminating the confounding effects of teacher personality, of avoiding biased sampling, of minimizing artificiality, of choosing appropriate statistical methods, and of allowing for aptitude-treatment interactions whereby a given method may suit some types of students more than others.

Finally, consideration has to be given to the scope for variations in teaching methods to have observable effects, given the particular context of the course in which they are investigated. If, for example, a text book is available and contains all that students are required to learn in the course, students' achievement might reflect much more closely their independent study of the text book than the teaching methods experienced. McKeachie (1963) argues that given such resources, students can even compensate for poor teaching methods, thus disguising the latters' inadequacies in comparison with other methods.

McKeachie's review (1963) of research comparing the lecture and discussion methods in higher education found that in most cases the finding was of no significant difference between the two. However, two studies found in favour of the lecture method where the criterion of effectiveness was student knowledge of subject matter, and six found in favour of discussions where examination criteria other than subject matter knowledge were used. These few results led McKeachie to conclude, 'when one is asked whether lecture is better than discussion, the appropriate counter would seem to be, "For what goals?" '. (p.1127)

Costin (1973), and McKeachie and Kulik (1975) reached essentially the same conclusion. Most recently, Kulik and Kulik (1979) compared several reviews of research on lecturing versus discussions and concluded that the reviewers agreed on three points: first, that lectures and discussions were neither more nor less effective than each other in relation to the learning of facts; second, that discussions were more effective than lectures for the attainment of higher level intellectual learning, such as problem-solving; and, third, that discussions were more effective than lectures in promoting changes in attitudes. Kulik and Kulik found that reviewers disagreed on whether discussions or lectures led to greater student satisfaction with the teaching received.

Reviews of research comparing lecturing with other approaches, including reading, self-instruction, laboratory work, and closed circuit television have usually led to conclusions that there is insufficient evidence to favour one method over the other. For example, Costin concluded that 'evidence fails to support popular derogation of the value of lectures in college and university teaching' (p.26). McLeish (1976), too, found insufficient research justification for abandoning the lecture <u>method</u> but cautioned against the lecture <u>system</u> which involved no method other than lecturing. Costin (1973) criticized the research for using such gross independent variables as 'lectures' and 'discussions' and reiterated Lumsdaine's criticism (1967):

> The use of such undefined terms as 'class discussion method' and other method designations used as independent variables may have done more to obscure the truth (no matter how careful the formal design of the experiment) than any other single flaw in educational research. As a basis for inference, a method is a meaningless independent variable unless it is reproducibly defined according to the operations it actually embodies, or unless it is defined empirically by an adequate sampling of a relevant population of lectures, discussion conductors, and the like. (pp.242-243)

Essentially, Lumsdaine's criticisms establish that most comparative methods studies, especially those using 'conventional methods', presumably incorporating lecturing, are mindless activities built upon ignorance of the nature of the latter, and possibly of the experimental teaching method. On the one hand, the requirement stated at the beginning of this section, that the methods contrasted be homogeneous within themselves and different from each other is almost always assumed and not demonstrated. On the other hand, it is impossible to know whether any sample is representative of a given population of methods if the empirical properties of the latter have been inadequately researched in the first place. Since the operations actually embodied in lecturing must be known to fulfil either of the conditions stipulated by Lumsdaine, research addressed to describing those properties is most relevant and will be the focus of the rest of this article.

VARIATIONS IN LECTURING

The two basic ingredients of lectures are verbal language and subject matter. They are the facets in which the most significant variations in lecturing might be expected to occur. Associated with them, particularly where the lecture and the audience are physically in each other's presence, is non-verbal behaviour including movement, gestures, posture, and facial expressions. Students of lecturing behaviour should find the study of variations in substantive material, verbal language, and non-verbal expression to be rewarding.

Substantive Material in Lectures

Earlier reviews of research on lecturing make almost no reference to substantive content, presumably because there has been almost no research on this source of variation. Conventionally, lectures are given on topics selected from within subjects or disciplines such as English literature, physics, mathematics, history and the like. Attempts to formulate structures within disciplines emphasize concept hierarchies, theories, laws, principles, methods of inquiry, problems, solutions and facts. Lecturers select from among these, and adopt strategies for analyzing, synthesizing and otherwise manipulating them. Text-books, research reports, theoretical treatises and the like are prime exhibits of the results of scholars' attempts to understand and order their subjects. Yet when it comes to attempts to analyse lectures for evidence of these processes in the day to day teaching in institutions of higher education there is little available.

There seems to be little in the literature of research on higher education equivalent to the work of Smith et al. (1967) at the University of Illinois. Using as a unit of analysis the venture, defined as 'a segment of discourse consisting of a set of utterances dealing with a single topic and having a single overarching content objective' (p.6), Smith and his colleagues

divided transcipts of lessons given in high schools into ventures and set about identifying teaching strategies apparent within them. Teaching strategies were seen to consist of combinations of moves, such that within any one venture there might be found various sequences of moves. This process led to the identification of eight types of ventures, as follows: causal, conceptual, evaluative, particular, interpretative, procedural, reason, and rule. Each type of venture contained particular types of moves. For example, conceptual ventures contained three broad categories of move: descriptive, comparative, and instantial. Descriptive moves included description of a characteristic of a concept and listing of the parts that make up a concept. Comparative moves included statements of similarities and differences between a focal concept and other concepts. Instantial moves included identification of instances of a concept. Conceptual ventures were found to consist of only descriptive or comparative or instantial moves, or a combination of only two of them, or combinations of all three types of move. Comparisons of lessons given in several subjects revealed that conceptual ventures were particularly common in science, rule ventures occurred predominantly in geometry, particular ventures typified history/social studies lessons, and interpretative ventures were emphasized in English. Subsequent research by Nuthall (1968) revealed that ventures containing descriptive and instantial moves were more effective than ventures containing comparative moves in inducing concept learning in students. Although the research by Smith et al. (1967) and Nuthall (1968) was conducted at high school level with lessons in which there was verbal interaction between teachers and students, rather than lectures only, it has interesting implications for research on lecturing in higher education where the concepts of venture, strategy and move are probably equally applicable. Brown and Armstrong (1978) developed a System for Analysing Instructional Discourse (SAID) from the concepts developed by Smith and his colleagues, and Brown (1980) subsequently incorporated it successfully in a program for developing teaching skills at the University of Nottingham. Unfortunately, data based on the analysis of the content of lectures were not reported.

Research on the effects of variations in the content density of lectures has been conducted as part of the 'Dr. Fox' investigations of the relationships between variations in lecturer behaviour and audience evaluations of the lectures. Abrami et al. (1982) synthesized the results of 12 experiments designed to test the relative effects of variations in content density and expressiveness on audience ratings and scores on tests of subject matter learning. The lectures included in this body of research were presented on videotape. In the Ware and Williams (1975) tapes, the high-content treatment contained 26 different teaching points on 'The Biochemistry of Learning' as part of an introductory course in psychology. The medium-content and low-content treatments contained 14 and four points, respectively. Length of treatment was kept uniform by the insertion of unrelated examples, meaningless utterances, and circular discussion. Perry, Abrami and Leventhal (1979) developed a set of black and white videotapes on impression formation for their research, while Perry, Abrami, Leventhal and Check (1979) used colour videotapes on sex roles and stereotyping. Both the latter sets of videotapes were also for introductory courses in psychology, and used procedures similar to Ware and Williams' procedures for varying content density and maintaining uniformity of treatment length.

Abrami et al. (1982) found that across the various studies, variations in content density accounted for only about four percent of the variance in student ratings but for almost 15 percent of the variance in test performance. The conditions under which these studies were conducted and the fact that only one discipline was represented in them inhibit generalizations about the effects of variations in content coverage on student achievement and

evaluations of teaching. In view of those problems, Abrami et al. (1982) advocated research in settings more like those occurring naturally in educational contexts. It would seem that such research would lead to greater understanding of lecturing as a teaching method if it included the observation of qualitative, as well as quantitative, variations in substantive material.

In summary, the systematic study of substantive aspects of lecturing has barely begun in higher education contexts. As a result, little can be demonstrated about the content and structure of knowledge as it is mediated to students through lectures. There is some evidence that student achievement varies as a consequence of the amount of tested material covered in lectures, but that evidence was gathered in research contexts that make generalizations hazardous. Notions such as information overload, concept hierarchies, optimal pacing and sequencing, concreteness and abstractness appear not to have been researched with respect to lecturing in higher education, though they might have been used in planning for lecturing, in text development, and in the design of courses.

Clarity in Lecturing

When students are asked to comment formally upon the teaching they experience in higher education, they are usually asked to rate its clarity. Clarity is seldom defined for them and so it is assumed that they know and agree upon its meaning. Yet reviews of research on clarity in teaching indicate that it is a reliable influence upon student achievement (Rosenshine and Furst, 1973). Clarity, in its undefined state, is a variable that demands a relatively high degree of inference on the part of the rater. Several attempts have been made to identify the precise components of clarity and some of this research has been conducted with respect to lecturing in higher education.

Land (1979) described five specific attributes of clarity which he named: vagueness terms; verbal mazes; specification and emphasis; clear transitions; and unexplained additional content. Hiller, Fisher and Kaess (1969) initially reported on vagueness terms in research on teaching. They analyzed transcripts of high school lessons given as lectures on topics in social studies. They argued that teachers' uncertainty about the sbuject matter manifested itself in the use of vague terms and phrases, such as 'things', 'about', 'some', 'probably', and 'may be'. They also developed the concept of verbal fluency as indicated by length of sentences, the appearance of commas in the transcripts of lectures, and the occurrence of 'uhs', 'ahs', and other hesitations. The latter hesitations were also used by Smith (1977) and his colleagues in association with the concept of 'verbal mazes', described as false starts, redundant words, and tangles of words.

Specification and emphasis were defined by Land (1979) as 'the presence of an explanation of how a concept was an example of the concept definition' (p.796). The same author defined clear transitions as 'the presence of such transitional terms as "now" and "the last item" ' when the teacher was indicating that one part of a lecture was ending and another part beginning (pp.796-797). Additional, unexplained content was defined as 'extra terms that were related to the lesson but were not essential to the main idea of the lesson' (p.797).

Land (in press) summarized research on these variables at the college level. He reviewed two studies (Land & Smith, 1979a, 1979b) of mathematics classes at the college level which had experimentally manipulated the frequency of vagueness terms used by the teacher and had then sought effects on student achievement. In each case, statistically significant ($p<.05$) or near

significant ($p<.07$) negative effects on vagueness were found and the proportions of variance accounted for in unadjusted student achievement scores ranged from 2% to 8%.

Land (in press) also reviewed studies at the college level of the effects of combinations of all the clarity variables described above. Three such studies (Denham & Land, 1981; Land, 1979, 1980) found significant effects in favour of clear expositions with clarity accounting for 20%, 8% and 6% of the variance in student achievement in psychology. Land and Smith (1981) found no significant effects in college level social studies for vagueness terms and verbal mazes combined, but Land (1981) found a signigicant effect for that combination, accounting for 6% of the variance in favour of clarity in college level mathematics. In both studies large effects of the clarity combination were found on students' perceptions of teacher clarity. Clarity accounted for 59% of the variance in student perceptions of clarity in Land's 1981 study and 32% in Land and Smith's study (1981). That students were so sensitive to variations in clarity is evidence that the experimental treatment 'took'.

Land (in press) concluded his review of research on low-inference measures of clarity as follows:

> On the basis of natural classroom studies, low-inference variables of clarity can be broadly divided into those that inhibit learning (e.g. vagueness terms), and those that facilitate learning (e.g. signaling transitions). We know more about two of these variables - vagueness terms and verbal mazes - than we do about other low-inference clarity variables. Additional research in delineating other low-inference clarity variables and their effects (singularly and in combination) on student perception and achievement is needed. (p.9)

Land went on to point out the further need to apply the findings of such research in attempts to change teachers' behaviour and test the effectiveness of such change in enhancing student achievement.

In a study using a different approach to measuring clarity Hines, Cruickshank and Kennedy (1982) obtained observer ratings on a cluster of twenty-nine different low-inference variables thought to comprise clarity in teaching. In the college level mathematics classes studied, variations in clarity were found to account for 52% of the variance in mean class achievement ($p<.03$). That a single variable of teaching behaviour should account for so much variance in mean class achievement is unusual and perhaps should be accepted with caution. Clarity as observed on the twenty-nine variables was also found to be strongly related to students' perceptions of teacher clarity. Those perceptions, in turn, accounted for 28% of the variance in mean class achievement and related strongly to student satisfaction. It seemed as though student perceptions of clarity in teaching mediated the effects of observed clarity upon both student satisfaction and achievement.

As with research on teacher clarity in other settings, studies in the higher education context indicate that the clarity construct has both predictive and concurrent validity in terms of a variety of product criteria and when operationalized in different ways. The effects of teachers' use of vagueness terms and verbal mazes upon student achievement have been consistently negative. The implications of these findings for the improvement of teaching are, however, in need of research. It is not yet established whether vagueness terms and the elements of verbal mazes are language impediments that can be eliminated through training in verbal expression or whether the problems are rooted in teacher lack of mastery of subject matter, requiring more academic development. The study by Hiller (1971) suggested the latter, but there is

a need for further study, preferably in higher education contexts. In the meantime, teachers in colleges and universities can be reasonably confident that students exposed to teaching that is high in clarity tend to achieve at a higher level and to evaluate that teaching more positively than students experiencing teaching that is low in clarity.

Expressiveness in Lecturing

One of the earliest published studies of lecturing was the study by Moore (1919) who found that the mean achievement score of students who received a lecture read from notes was 35 percent lower than the mean achievement of a comparable group of students who received the same lecture delivered independently of notes. The achievement scores were obtained on a test of retention of the content of the lecture. Moore admonished his audience as follows:

> ... It is hard to escape the conviction that the lecture method, in the sense of the reading of notes to hardly persuaded students, is one of the most dubious features of present day method in college teaching... to that extent he [lecturer] is incurring the danger of reducing his real function in the college to the mere marking of class attendance (p.469).

Moore discussed possible reasons for the difference in performance of the two groups and suggested that the lecturer who did not depend on notes was able to respond better to cues from the audience. Presumably, that lecturer's reactions to the audience were largely non-verbal, since the experimental design required that the content remain common in both treatments. Other speculations might include the possibility that the lecturer who was able to perform free of notes was likely to be more expressive, that is, to control better the use of emphasis, intonation, to maintain eye contact with the audience, to move around and to vary facial expression. Although the design of the experiment required that lectures under both conditions be delivered with the same tempo and voice intonation, there was scope for variations in some of the above aspects of expressiveness.

It was several decades after Moore's experiment that systematically gathered evidence concerning the effects of variations in expressiveness became available with respect to lectures in higher education. Expressiveness was one of the qualities of lecturing behaviour manipulated in the 'Dr. Fox' studies of the validity of student evaluations of teaching in higher education. Definitions of expressiveness varied among the dozen or so studies, particularly in the degree of inference that would be required by an observer wishing to detect the degree of expressiveness exhibited in a lecture. Ware's definition (1974) was the only one in the experiments reviewed by Abrami et al. (1982) to include the terms 'dynamism', 'emotional appeal', 'seduction', and 'stimulation'. Meier and Feldhausen (1979) alone referred to looking at notes, and smiles. Perry, Abrami, Leventhal and Check (1979) made the only reference to eye contact. The most agreed upon ingredients of expressiveness were charisma, enthusiasm, friendliness, vocal inflection, humour, and physical movement, all of which are highly inferential concepts which probably subsume the more specific behaviours, such as smiling, looking at notes, and making eye contact.

The meta-analysis by Abrami et al. (1982) found that, across the 12 experiments reviewed, approximately 20 percent of the variance in students' summary or global ratings of instruction were accounted for by the variations in the level of expressiveness on the videotaped lectures. Lectures exhibiting higher expressiveness were rated more favourably than lectures with lower expressiveness. However, expressiveness was found to have little association with

achievement, for variations in the former accounted for only about 4 percent of variance in achievement scores.

In another study that was not part of the 'Dr. Fox' series and was not reviewed by Abrami et al. (1982), Andersen and Withrow (1981) experimented with three levels of non-verbal expressiveness. The high expressive treatment was described as 'an expressive voice, many gestures, facial animation, direct body and eye orientation with little reliance on notes, and some overall body movement away from the podium' (p.349). In contrast, the low expressive treatment 'had a monotone voice, no gestures, little facial expression, and a posture and eye position fixed on notes' (p.349). Andersen and Withrow investigated the effects of variations on non-verbal expressiveness on three student outcomes: affective learning, including among others, perceptions of lecturer sociability, attitudes towards the specific videotape, the lecture, and the content; behavioural learning, including likelihood of engaging in suggested communication strategies and of attending another lecture; and cognitive learning, involving scores on tests of immediate and longer term recall. It was found that variations in non-verbal expressiveness accounted for 22% of the variance in a composite of the social learning scores, to which perceptions of lecturer sociability was the main contributor, with attitudes towards the specific videotape and towards the lecture also contributing. When univariate relationships were examined it was found that the treatment variations accounted for 9%, 3%, and 6% of the variance in lecturer sociability, attitudes towards the specific videotape, and attitudes towards the lecture, respectively. No significant effects were found on the behavioural learning scores or on the cognitive learning scores.

In summary, expressiveness appears from the research review to have a sizeable influence upon students' affective reactions to instruction but not upon their achievement. This conclusion needs to be accepted with caution, however, given the context in which the various studies concerned were conducted. Abrami et al. (1982), after having concluded on the basis of their meta-analyses that expressiveness had been shown to have a sizeable impact on student ratings of instruction but not on achievement, while the reverse applied for content coverage, discussed limitations arising from the ways those two variables had been presented in the 'Dr. Fox' experiments. In particular, it was pointed out that the levels of expressiveness and content coverage as manipulated could not be held to be representative of the variations in both that would be found in field studies. Therefore, it was argued, findings of the differential effects of the experimental treatment cannot be assumed to represent the findings of effects that might be found in the field. The authors went on to advocate field research in the variations in occurrence of expressiveness, content coverage, and other attributes of lectures.

Managerial Aspects of Lecturing

While lecturing is essentially a content oriented teaching method, its success as a format for communicating substantive material to an audience requires the cooperation of the latter. Concerns expressed by lecturers often involve their ability to maintain audience attention and to eliminate deviant behaviour such as loud talking, restlessness, and even the throwing of missiles.

Kounin (1970) reported a study of the phenomenon of 'the ripple effect' arising from his informal observations of the effect on the audience of his reprimanding a student who was reading a newspaper during a lecture he was giving in a course in Mental Hygiene. As well as the target student ceasing to read the newspaper, Kounin noticed dramatic effects on the others: 'Side glances to

others ceased, whispers stopped, eyes went from windows or the instructor to notebooks on the desks. The silence was heavy, as if the students were closing out the classroom and escaping to the safety of a notebook. I believe that if I had sneezed they would have written the sound in their notes ... Why were they so affected by an action of the instructor that wasn't even directed at them?'. (pp.1-2)

In an experiment stimulated by the incident, two instructors, each of two classes in Education (a total of four classes) administered a 'threatening desist' in one of their classes and a 'supportive desist' in the other, in each case to a 'student-stooge' who came very late by arrangement with the experimenter. Checks on whether the experimental manipulation 'took' confirmed that students were well aware of the two different types of reprimand ($p<.001$). With data gathered by questionnaires administered before and after each lecture, Kounin found that students' ratings of the instructors' competence, likeability, nonauthoritarianism, and fairness, and their own freedom to communicate about themselves to the instructor, tended to decrease in every class where threatening desists had been applied. The same was found for supportive desists, except for one of the two classes on likeability and the two classes on fairness, where ratings tended to increase. He also found that decreases in ratings following threatening desists were significantly greater, or nearly so, than those following supportive desists for eight of the ten comparisons (two desists x five qualities).

However, the fact that students reported being surprised that an instructor would issue a reprimand to a latecomer, and that such behaviour was not typical of either instructor, discouraged Kounin from attributing the differences in ratings to the desists themselves. Instead he recommended the 'advisability of using teacher style variables that are within student expectations and that have some ecological prevalence' (p.7). In subsequent research on matters of discipline and group management in classrooms, Kounin sought contexts other than those in higher education and found strong support for his recommendations. It remains to be seen whether the recommended observation of natural teaching contexts, and of style variables, rather than induced incidents in experimental designs, gives greater promise of understanding such phenomena in higher education.

While Kounin's experiment was an investigation of lecturer influence upon the audience, Klein (1971) studied the audience's potential to influence the lecturer. In a study stimulated more by an interest in a general classroom phenomenon than in the higher education context specifically, Klein (1971) conducted an experiment concerning student influence on teacher behaviour. Her study involved as subjects twenty-four guest lecturers in Education ranging from graduate teaching assistants to full professors in six universities in the U.S.A. Regular undergraduate and graduate students applied the experimental treatments in the twenty-four classes. The students were given instructions as to when to behave normally, when to engage in positive behaviours, and when to engage in negative behaviours during predetermined periods during class times with the twenty-four teachers. Positive behaviours included smiling, looking at the teacher, and answering questions quickly and correctly. Negative behaviours included frowning, looking out the window, talking to other students, and disagreeing with a teacher's statement. Flanders Interaction Analysis Categories (FIAC) (Amidon and Flanders, 1963) were applied to tape recordings of the class sessions along with live observational instruments of teacher non-verbal behaviour and student behaviour. Klein found that the teachers appeared to change their behaviour in response to changes in student behaviour. She concluded that teachers engaged more in directive and criticizing behaviour during periods of negative student

behaviour than during periods of positive or natural student behaviour, and that teachers used clarification more during positive student behaviour than during negative student behaviour. These findings suggested to Klein that, if positive teacher behaviour enhances student achievement, and if students can elicit positive teacher behaviour, then 'students may be encouraged to assume responsibility for their own behaviour and purposely help their teachers behave more effectively'. (p.419)

Research on control and management during lectures in higher education contexts promises to be helpful to those who are daunted by the prospect of addressing large audiences several times a week while maintaining interest, order, and attention. Yet such studies are so few that there is clearly no sufficient empirical basis to guide lecturers in that position. Kounin's concept of desist technique may prove more useful than he apparently thought it was, especially if careful analyses of the successful and unsuccessful ways in which lecturers respond to deviant behaviour is stimulated by it. It is not surprising that student behaviour affects teacher behaviour, as Klein demonstrated. Indeed, responsiveness on the part of teachers to student reaction is often regarded as essential for effective teaching. However, Klein's idea that students might act in concert to manipulate lecturer behaviour is bound to startle even the most liberal lecturers.

Synthesis of Lecturing Behaviour

Research on lecturing in higher education contains at least two approaches to the identification and description of ways in which separate categories and facets of teaching behaviour cohere or are synthesized into patterns. Such syntheses, if seen to typify the behaviour of some lecturers over time, would seem to underlie concepts such as lecturing styles and roles. One approach depends upon quantitative information about patterns of lecturing behaviour as perceived by teachers themselves and conveyed through self-reports (Brown, et al. 1982.) A second approach is the ethnographic one (Cooper, 1981a, 1981b; Cooper, Henry, Korzenny, and Yelon, undated; Cooper, Orban, Henry and Townsend, undated; Yelon, Cooper, Henry, Korzenny and Alexander, 1980).

Brown et al. (1982) focused their attention upon the styles of lecturing of 258 lecturers in two English universities in relation to subject areas, academic status, and years of experience. A 60 item self-report inventory was administered and the responses factor analysed to generate six scales, labeled as follows: Information Giving; Structured Lecture; Purposive Lecture; Visualized Lecture; Self-Doubt Lecture; and Presentation. Cluster analysis was used to yield five clusters of lectures, each having a distinctive pattern of lecturing style. These five styles are described as Oral Lecturer, Exemplary Lecturer, Information Providers, Amorphous Lecturers, and Self-Doubters.

Brown and his colleagues found a strong association among lecturing styles and subject ares, with Oral Lecturers more common in the humanities and social sciences, Exemplaries more often found in biomedical sciences and Information Providers and Amorphous Lecturers more frequent in science and engineering.

Length of experience was found to be unrelated to lecturing style, but a trend was noted for the Exemplary style to be more frequent among Professors and for Information Providing and Amorphous styles to occur more among lecturers.

A second approach to research on teaching styles has been adopted by a group of researchers from Michigan State University (Cooper, 1981a, 1981b; Cooper, Henry, Korzenny and Yelon, undated; Cooper, Orban, Henry, and Townsend,

undated; Yelon et al. 1980). These researchers have used the techniques of ethnomethodology in attempts to understand how college teachers and their students interact to attain their goals.

Cooper, Orban, Henry and Townsend (undated) focused their attention on a professor of Crop and Soil Science as he taught an introductory course to 115 students. Initial observations suggested that three main elements of style were present in this teacher's interactions with students: 'relaxed, open rapport'; 'strong control over the structure and pace of the lesson'; and 'storytelling' to provide an organizing framework for the content of the lesson (p.7). Subsequent investigation through discussions with the professor and his students and through the analysis of videotapes of class sessions confirmed the early impressions regarding those three elements of teaching style. In addition, two other features were noted. These were the use of 'planned redundancy', that is, repetition using verbal and non-verbal communication, personalization, and the use of examples and language to give additional meaning and concreteness to the learning tasks.

Cooper, Henry, Korzenny and Yelon (undated) and Yelon et al. (1980) reported on the application of ethnomethodological research procedures to the study of the teaching of another professor, this time a teacher of writing. Cooper and her colleagues focused upon the professor's questioning strategies while Yelon et al. analyzed the broader matter of teaching style.

Yelon and his associates classified the professor's behaviour into four categories: dynamic; respectful and open; task and standard oriented; and organized and prepared. However, a fifth aspect of his style emerged, modeling, in the sense that he saw himself as a model for students to follow.

Cooper (1981a, 1981b) reported on the study of a third college teacher, this time in relation to a course within Electrical Engineering and Systems Science. In one of the reports (Cooper 1981a), she focused more on changes in the roles performed by the teacher during sessions and analyzed teaching roles, as indicated by pronouns of address, into such categories as Manager (responsible for course requirements), Teacher (facilitator of student learning), Learner (modeler of the thinking process), and Person (a fellow human being).

It remains to be seen to what extent these case studies by the Michigan State researchers stimulate further research employing ethnographic methods. The phenomena they describe may be idiosyncratic to the teachers studied or may be generalizable to others. Only subsequent studies will tell.

Clearly, concepts of teaching styles and roles are much more to be found in popular parlance than in research on teaching in higher education. It is to be hoped that the few studies reviewed above will form a sound basis for future research. In the meantime, the research by Brown and his associates raises again the question of the connection between structures of knowledge and ways of teaching. Their finding a relationship between academic status and lecturing pattern is unique in the research reviewed in this article and evokes several plausible interpretations. Are some lecturing styles more conducive to promotion than others? Does increased mastery of an academic discipline lead to the adoption of some lecturing styles rather than others? Or, given the methodology of the study, do full Professors merely see themselves differently from others, and if so, why?

CONCLUSIONS

Comparative methods research involving lecturing has stimulated agreement among several reviewers that lecturing fares comparatively well in relation to the pursuit of factual learning by students and of student satisfaction. However, discussion methods, it is agreed, seem more successful when it comes to higher cognitive learning and attitude change.

The 'conventional teaching methods', which appear to compare reasonably well with most innovations in educational technology, including programmed learning, visual based instruction, audio-tutorials, and computer assisted instruction, are probably composites of several teaching methods, including both lectures and discussion. Consequently, that body of research provides little or no information about lecturing itself. Similarly, studies demonstrating the clear superiority of the Keller Plan over conventional methods reveal little about lecturing.

There can be little doubt that students do learn from lectures, and that lecturing will continue to be a common teaching method in institutions of higher education. It is important, therefore, that the factors which contribute to lecturing effectiveness, and which distinguish between more effective and less effective lectures, be investigated. Research on variations in lecturing has produced some evidence that student achievement is positively affected by greater content coverage, more clarity and, to a lesser extent, more expressiveness. Student evaluations of instruction appear to be positively affected by more clarity and more expressiveness, but to lesser extent, by greater content coverage. While these generalizations must be tentative, there has been such a paucity of research on lecturing styles and techniques for maintaining order and attentiveness during lectures that even the most tentative conclusions regarding them would be premature. Similarly, other issues such as the effects of lecturer status and type of discipline upon lecturing phenomena have received little illumination from empirical study.

Almost all of the commentators on the research reviewed in this article have criticized the wholesale adoption of experimental designs, both in comparative methods studies and in research on variations in lectures, to the exclusion of field studies. The control that might have been gained over extraneous variables in the experiments seems to have been won partly at the expense of the credibility of the findings, but also at the expense of knowledge and understanding of the nature of lecturing as it occurs in actual teaching contexts in higher education. Until more is known about the nature of lecturing, attempts to manipulate variables in experimental designs must be done in ignorance of the actual nature and rates of occurrence of those variables under natural conditions. Without the guidance of that type of descriptive information, experiments continue to run the risk of being dismissed as unreal. Furthermore, without that type of information attempts to understand and improve lecturing can only proceed in ignorance of the very activity in question.

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Introducing Explicit Training in Problem Solving into our Courses

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ABSTRACT
Details are given of the five stages needed to introduce a change by explicitly teaching problem solving. Examples and resources are given for each stage. These are: evaluate the teaching-learning environment; define what problem solving skills we want to develop; explore the alternatives we have in terms of sequences, learning theories, relationships with other content and teaching/learning environments; develop a plan, and implement and evaluate.

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INTRODUCING EXPLICIT TRAINING IN PROBLEM SOLVING INTO OUR COURSES

Many have asked "Now that I want to do something to teach problem solving, how might I go about doing it?" Some identify minutes that can be devoted to this task; others, hours, and some might consider a course. The purpose of this paper is to outline a generally applicable procedure to go about implementing a change. The approach is to evaluate the environment to see what flexibility one has, to define the problem, to explore the problem, to devise a plan and to implement and evaluate.

EVALUATE THE ENVIRONMENT

In this first phase, we

1.1. decide that we want to do something,
1.2. think about the forms of instructor-student interaction and the current utilization of time,
1.3. find some opportunities to insert or alter the student experiences,
1.4. think about the resources we will need: time to develop the change, money and facilities,
1.5. think about the total environment in which the change will occur - the chairman, dean and the students and the support we will need and the interactions our ideas will have.

Once we have decided to introduce a new experience, we must find time in the curriculum. Something must be displaced. Our approach has been to identify the three to seven key fundamentals that are usually introduced in each course. All the rest of the course is usually definitions (to help students use the fundamentals) and examples. From this type of analysis we were able to shift 120 h of instruction from traditional engineering content to problem solving. This probably represents an extreme; what most instructors are looking for is 2 to 10 h. Usually it can be found. Other possibilities, besides in-class time, are homework, projects, reading assignments or summer projects.

When we have decided to make the change, all people involved should be informed. This includes the chairman, so that he/she can supply any modest financial and moral support, and especially the students so that they can provide feedback to the instructor. Some mechanisms by which the feedback can be encouraged is by the ombudsman approach. In this, suggested by Dr. Jim Stice, University of Texas, we ask for 3 students to volunteer to chat with us periodically throughout the year to share impressions of the course. This works extremely well. The use of the ombudsman usually allows us to alter the course as it proceeds instead of having to wait until after the course to see the student evaluations.

DEFINING THE PROBLEM

Here we need to:

2.1 define what we mean by problem solving and identify the subset of skills,

2.2 identify novice and expert or target skills to see the changes expected,
2.3 convert 2.1 and 2.2 into a set of behavioural objectives,
2.4 maintain an overview of the whole context, but limit ourselves by the resources to addressing a meaningful educational task. Decide on specific course objectives.

Recently I ran a workshop for high school teachers on how to introduce instruction in problem solving into their programs. Unlike other groups, they said they knew what their task was and wanted to use the workshop time to develop materials. When they compared their efforts after an hour, they discovered that each was developing materials that others described as "that's not problem solving". Before we start we must define our terms.

A dictionary may provide a reasonable starting point. However, these may not be very operational for an educational context. For example, Webster's Third International Dictionary defines a problem as "an unsettled matter demanding solution or decision and requiring considerable thought or skill for its proper solution or decision". As a start this is alright; however, to be operational requires that we elaborate on what we mean by "considerable thought" or "skill" and "proper". After several years of trying to define "problem solving" Chorneyko et al. (1979) were able to reach a reasonable starting definition of problem solving. We continue to refine this definition (Woods (1983)a,b). But more significant than definitions is an identification of the set of skills needed to make the definition workable.

Indeed, our major effort for the past 8 years has been to identify the component skills. Figure 1 succinctly summarizes those skills as strategies, hints, elements, types, prerequisites and evaluation. A description of these would detract from the theme of this paper; details are given elsewhere Woods (1983)a,b.

Next we should identify what skill the students possess now and what we would like them to have. In the context of the education, we need to identify the current "novice" set of knowledge or skills and the target or "expert" set. A popular research method to extract this information is protocol analysis whereby individuals talk aloud as they solve problems. The transcripts of their talk is then analyzed.

Protocol analyses have been done for novices and experts by many researchers to help define the gap that exists between novice and expert skills (Larkin (1976) (1980), Woods et al. (1979), Chi et al. (1981), and Schoenfeld et al. (1981)).

Their major findings were as follows: Larkin (1976), studying problem solving in the context of physics found

	Novice	Experts
1.	cannot quickly and accurately identify content needed to solve problem (rather they are slow and inaccurate).	rapidly, within seconds, identify content useful in solving problem

	Novice	Experts
2.	cannot use effectively a range of techniques to redescribe the problem statement. What attempts they make are formal and often not helpful.	can redescribe problems through a wide range of techniques including sketches, graphs, handwaving that allows them to see the key conditions, variables, ideas within the problem.
3.	cannot identify the key fundamental concepts, rather works with all the variables searching for ways to combine them. Tends to work blindly and by trial and error.	uses a few key fundamental concepts as building blocks. These are encoded as quantitative formulaes, visuals and verbal descriptions.
4.	tend to memorize and try to recall all the particular or special equations independent of any general, fundamental relation.	to obtain "particular or special" equations, reconstructs these or derives these from general, fundamental relations.

Larkin's work, (1976) (1980) reinforced by findings of Chi et al. (1981) and Schoenfeld et al. (1981), also found that

Given	Novice	Expert
a succinct set of key words. eg. man mas m_1 ground, heigh x, rope, pulley, block mass m_2 tension rope.	Produced nonsense when tried to construct a reasonable situation.	Produced sound situation.
a problem statement.	Focusses on English prose & tries to use this to discover what's the situation.	Probes to discover engineering scenarios behind the situation.
	Will focus on the objects in the problem statement.	Will focus on the actions of what's happening.
a problem similar to ones solved before.	Will group as similar ones that look alike or have same objects.	Will group as similar ones that have same fundamental principles or processes.
a problem statement.	Tries to translate it directly into a mathematical representation.	Tries first a series of engineering representations of what is happening and is important in the problem and then translates this representation into a mathematical representation.

Given	Novice	Expert
an understood, well defined problem and is ready to develop a plan.	Use a working backward tactic.	Uses a working forward tactic.

Other researchers have addressed this challenge another way. They have identified the reasons why people solve problems efficiently. A psychologist, D. Meichenbaum (1980), says poor problem solvers fail to recognize the presence of social problems, generate general alternative solutions, formulate and define problems precisely, evaluate separate, alternative means, consider alternative consequences, perceive cause-effect relations in interpersonal events, and check the effects of specific implementation.

Another psychologist, A. Whimbey (1975, 1980) and Whimbey and Lochhead (1980) suggests that poor problem solvers fail to work carefully and check and double check their work. Our work, in the educational context, finds that poor problem solvers fail to be aware of mental process used to solve problems, accept challenge to improve skills, identify and use an organized strategy, identify and develop personal qualities and preferences, develop skills in creativity, analysis, generalization, simplification, and have confidence in applying heuristics (Woods et al. (1979)).

For professional engineers in industry we found that poor problem solvers fail to consider many initial alternatives (they jump into the problem), define the real problem, establish criteria, correctly identify the people component to the problem, think up many alternatives, understand evaluative procedures, and use any heuristics when they get stuck (Woods (1983b).

Edward de Bono (1976) describes poor problem solvers as failing to consider the whole problem: use an inadequate time scale, egocentricity or assume duality; use judgment: focus on initial judgment only, assume duality, or ego judgement and perceive correctly: incorrect sense of importance of issues, use arguments in extremes.

Piaget (1957) suggests that some people fail to solve problems because they cannot use formal thinking level: rather they still function at the concrete level.

Perry (1970) has identified that some cannot use relativism when needed: rather they still function at the duality level.

Although at this stage one may not understand all the terms used to describe the difficulties students have with problem solving, I hope that this has provided an understanding of the scope of the task we have.

Figure 2 attempts to summarize the student's difficulties pictorially when compared with Figure 1. In our research, whenever we identified a missing skill we recorded it next to the skill shown on Figure 1 (Woods et al. (1975), (1979). Thus, for example in Figure 2, five different types of difficulties were identified that were related to student's ability to sort out and "understand" prerequisite knowledge. The visual impact from Figure 2 suggests that students have difficulty with most, if not all, the component skills. Similar results were obtained when groups of industrial engineers were queried.

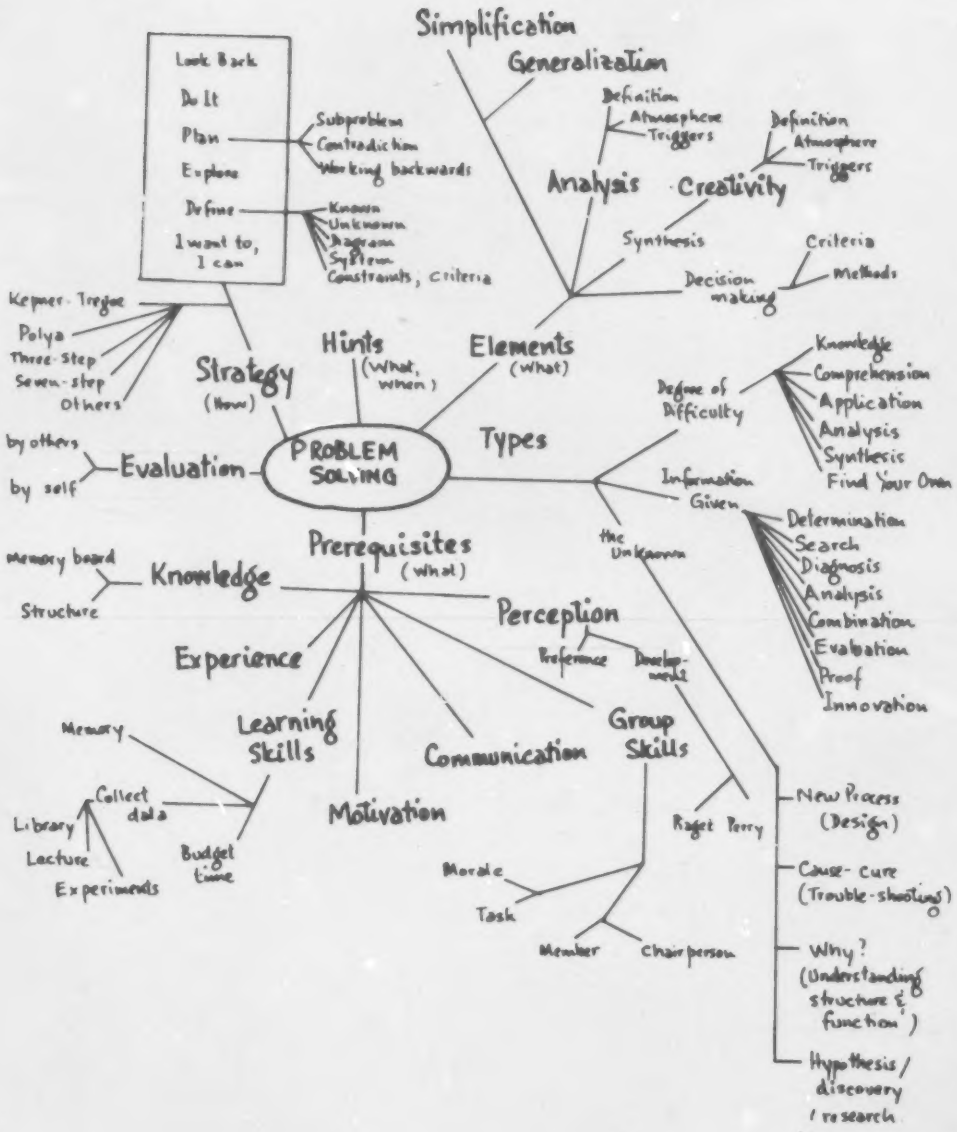

FIGURE 1: Skills related to problem solving

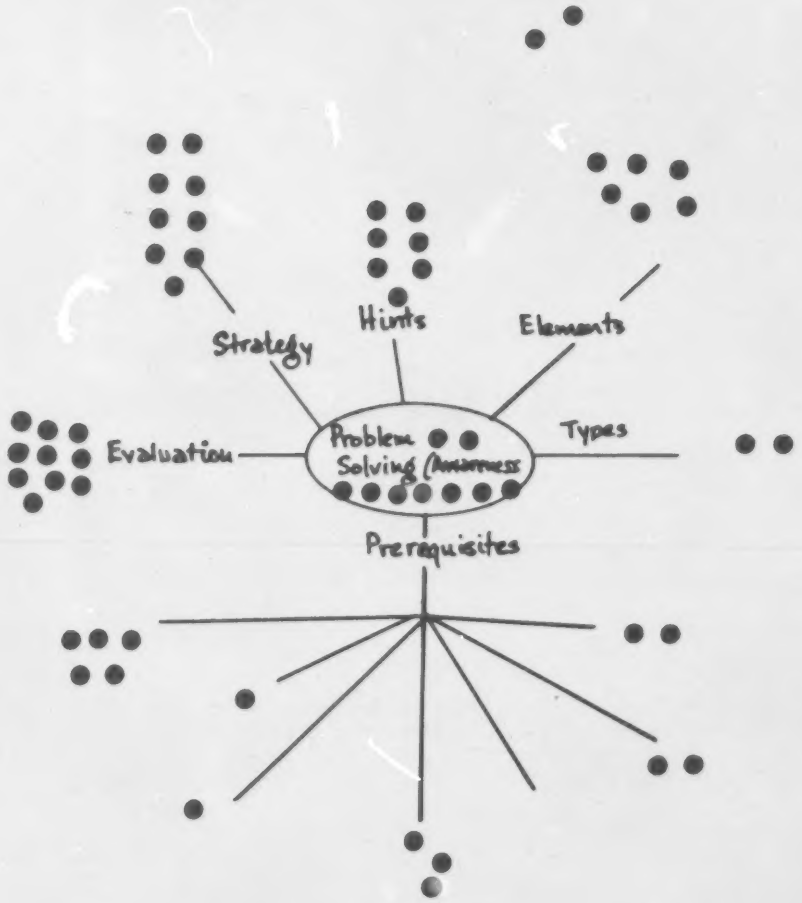

FIGURE 2: Identified difficulties undergraduate college students have with skills related to problem solving. (Each dot represents a difficulty.)

Sometimes the differences are so great between the novice and expert behaviors that we cannot achieve them all. Here we need to identify the total picture or the overview and that part of the whole that we will try to develop in our course. The first step to obtain such an overview is to relate the difficulties and skills that are lacking to the overall definition of the subject and the skill components. That is, relate it to the nouns and to the verbs. Probably the easiest way to do this to create behavioural objectives for the skills and to structure the set in a sequence so that the skills are developed systematically. Methods to do this are described by Mager (1972) and Popham et al. (1970).

As we have seen in Figure 2 the scope of skills that need to be developed to improve problem solving is broad. Indeed, one might easily become overwhelmed by the apparent enormity of the task. However, once we have gained an overview of the full spectrum we can break it into components. The easiest method is to create a structured list of learning problems. Although many have identified such objectives (O'Brien (1975), Plants et al. (1980), Gold et al. (1980) and Burton (1978)), for illustration purposes we present one example set in Table 1 in the appendix (Woods et al. (1979)). A trick in creating these is to try to write the verb in observable terms, try to include a criterion and to sequence these, wherever possible, so that earlier skills are the prerequisites of the later. The entries in Table 1 do not satisfy all the criteria but the details of the criterion are developed separately (Woods (1983)c). (As a sidenote to identify behavioural objectives for an existing course, Blizzard (1982) suggests that we start by perusing past examinations to identify what objectives we included in our evaluations.)

With these objectives we can then explore some options.

EXPLORE THE OPTIONS

The ideas that should be explored are as follows:

3.1. identify possible time-content sequences,
3.2. think about the effects of separating topics or blending topics,
3.3. consider starting with simplified cases first then progressing to the complex or vice versa.
3.4. do any learning theories help identify sequencing of content and experiences?
3.5. what relationships exist between learning skills, problem solving and the discipline content? What relationship do we want to exist?
3.6. explore alternative teaching and learning environments.

Now it is time to mentally evaluate various scenarios, to dream up a variety of alternatives, to establish links between the content, the teaching and the learning. We need to explore ideas to achieve the tentative objectives we have set for ourselves. Probably the easiest ideas to start exploring are the content-time relationships and the general sequencing. How are we going to separate the skills - do we overlay the buildup of several skills at a time or do we build up one and then the other? For example, to help students sort out knowledge, do we have a separate section on how to identify "and understand" key concepts and then provide the technically-rich concepts or do we develop the two together? Do we present the general case first and then illustrate all the special cases or do we present the simple case first and then build up the complexity? In terms of teaching-learning what educational "theory" do

you prefer? Gal'perin's (theory as adapted by Mettes et al. (1981)) of orientation, stage by stage practise, testing the learning and mastery or Kolb's et al. (1979) learning cycle, Piaget's concrete to formal (see Karplus et al. (1980)), experiential learning, or applying Bloom's taxonomy (1956)? Many of these are similar but we should check what we do in class and explore which one matches our style. Each may find that he/she prefers one style for one set of content, and another, for another.

How to provide evaluative feedback to the learners is another component to explore. Is it to be a written examination? What verbal feedback will we provide in class? How do we help students acquire confidence that they have skills?

Many different approaches have been taken to try to develop problem solving (Woods (1977), (1983)b). Some have separate courses; some integrate the problem solving with discipline content. The evidence seems to be that although separate courses can be very successful, students often have difficulty applying the skills learned to other courses or situations. Hence, if possible we should try to combine problem solving experiences with the discipline. That is, we would apply the problem solving skills developed to solve problems in Mathematics or Chemistry or French or Music. This is a necessary first decision. This also is the only type of decision we can make if we have but a limited amount of time that can be devoted to problem solving development.

Let us explore how we might provide an overview. If we chose a learning cycle (as suggested by Kolb et al. (1979)) we could start with an example of someone solving a problem - a clip from a popular movie, an appropriate cartoon, a brief detective story or an example from cards: a bridge hand. Alternatively the students could solve a short, fun problem. From this, with the guidance of the instructor, a key definition and list of skills can be extracted to yield something analogous to Figure 1. This would probably be more effective than just giving them a definition to memorize. However, if the sample problem is too complex the students will get too involved with the answer and neglect the extraction of the "process of how we solve problems". Hence, probably an appropriate cartoon will suffice. (As a sidenote, for any exploration or concrete experiential learning, students usually enjoy the experience immensely. Our task is to ensure that they extract a relationship between theory and the experience.) Thus, although we use components of exploration we are essentially using a workshop-evaluate mode to introduce this concept and evaluate by recall of a definition.

So we would proceed to select a task, an educational theory and a mechanism for evaluation.

Resource material is available for most of the learning objectives (Woods (1983)d,e,f), Bauman (1977), Walberg (1980) and Whimbey et al. (1980)).

Another idea to explore is the relationship between learning skills and the course content. Part of education is to learn how to learn. Another aspect is that our ability to apply knowledge to solve problems can depend on how we learned it (Eylon et al. (1979)). Although not all the evidence is clear, we should explore the relationship between how we learn, how we identify connections among the memorized, discipline theories and concepts and how we recall those connections. The medical school at McMaster University, for example, combines learning and problem solving strategies both with the discpline of medicine (Barrows et al. (1977)). The Twente University group developed a "key relations" chart to help learners to identify consistent sets

of relationships in the context of thermodynamics (Mettes et al. (1981)). Larkin (1975) developed a similar relationship chart, Fig. 3, to highlight for Physics students the components they should learn. We have used both Larkin's relationship chart and Tony Buzan's "mind" map or beetle diagrams (Buzan (1974)). This visual representation of the structure of a subject uses a central hub of an imaginary wheel as the central theme of the subject with the subtopics radiating out from the hub-like spokes. An example is shown in Figure 1 for the topic "problem solving".

In summary, the relationship between how we learn, what skill for self learning we want to develop and the discipline content should be explored.

We still have some other components to explore. What teaching and learning environment will we use? What medium will we depend on most? Some alternative environments are listed in Table 2. Each has its own characteristics and advantages and disadvantages. Descriptions of other teaching and learning environments are given elsewhere (Sears (1977), Pfeiffer et al. (1979)ff). Especially noteworthy are the annual review of structural experiences published by University Associates Publishers and Consultants.

To illustrate the choice of teaching and learning environment, consider the task of increasing awareness of the thinking process. Of the alternatives suggested, to increase awareness probably the pair method would be used. An anticipated difficulty is with the level of the Whimbey type problems normally recommended for use (Whimbey (1975)). To overcome this we might give a content-rich problem example statement at the beginning of the session to illustrate the type of problem we would like to be able to solve. Then, we could use the pair method using the Whimbey problems to acquire skill with the pair procedure. Finally, we could end the experience with subproblems of the content-rich example problem. After each section of practise we must build in evaluation and feedback to help develop the student's confidence. Part of this can be with the instructor collecting and summarizing the experience of the group. In a sense this is a structured application of the Kolb's learning cycle.

DEVELOP A PLAN

The exploration stage gave us an opportunity to think about components that will affect the creation of the teaching and learning environment. Now it is time to select from those alternatives, and create the necessary resources. The details needed include:

a. specific learning objectives,
b. evaluation instruments and procedures to give the students confidence that they have acquired the objective,
c. learning procedures and materials needed to achieve the objectives,
d. internal course organization that provides an opportunity to achieve the objectives, consistent with a learning model,
e. feedback/evaluative procedures to evaluate the teaching-learning process,
f. environmental awareness of what we are doing so that others can support our efforts.

Here are some examples. "A teacher has discerned that his students are unable to think of more than 4 alternative ideas when placed in a new situation. Experts quickly identify at least 20 alternatives. Although this, from Table

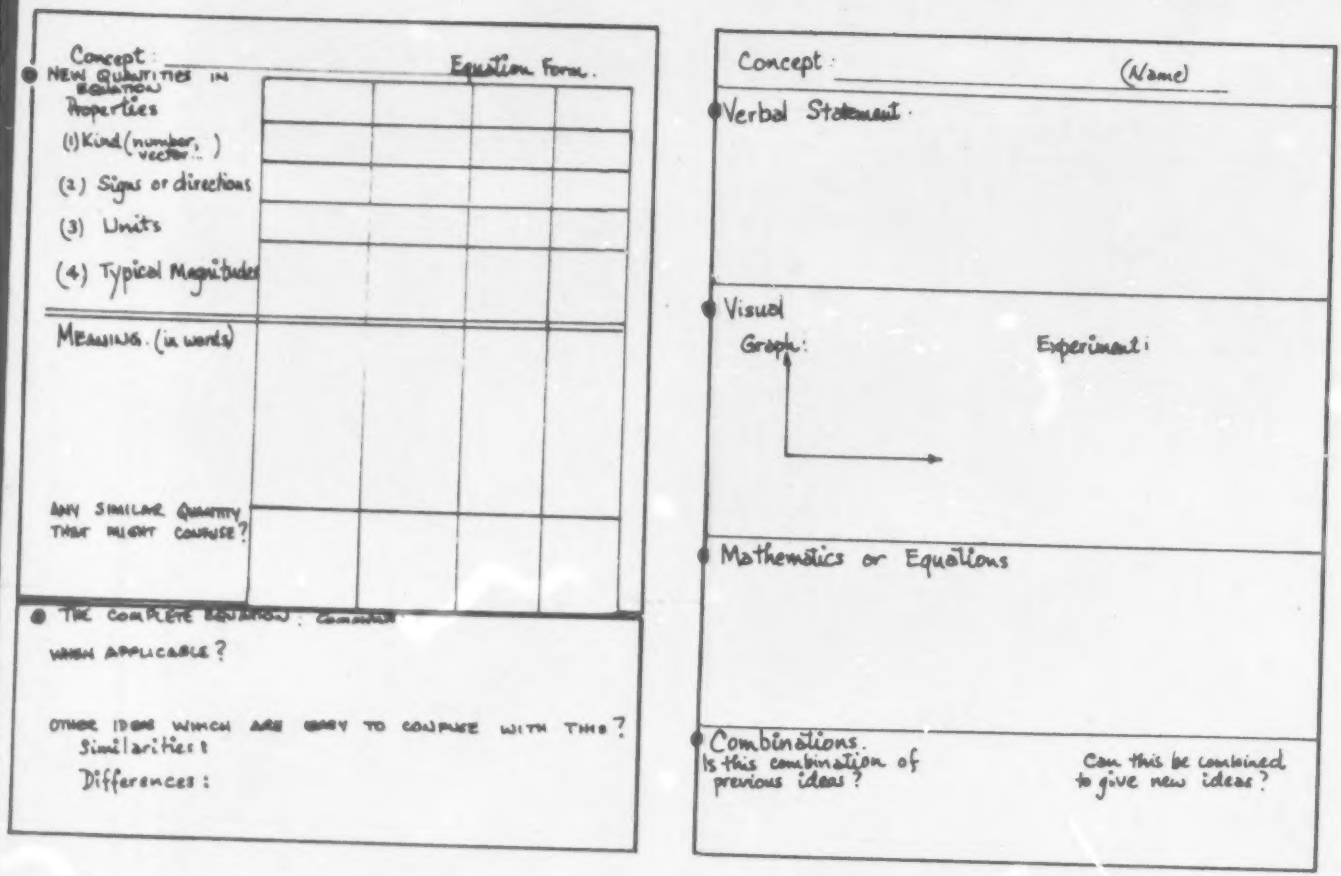

FIGURE 3: Larkin's relationship chart

1, is not the first objective he feels compelled to do something about this. He rationalizes his decision in that 'creativity' is an element of problem solving and as such can be developed independent of awareness and strategy application. He defines the term 'creativity as the ability to list many ideas and draws up a list of detailed objectives related to this overall goal. These are given in Table 3."

This is a reasonable first attempt. The instructor did not say, "I am going to develop creativity" nor, "I am going to improve creativity". Rather he/she identified the perceived novice skills, and some target skills. Creativity is a topic about which many educators and researchers have reservations so great care should be taken to try to build into the experience learning experiences that are founded on psychological fundamentals. This means, then, that it might be wiser to postpone this objective until later. We have discovered, however, that the experience will be more meaningful for the learners if they have had sessions on awareness and particularly on short and long term memory and the mental processing of information. This provides a rationale for many of the experiences that we would build into the learning program.

Now, given that we have already satisfied prerequisite objectives, "what next?" if we wished to pursue creativity further? First the learning objectives, given in Table 3, should be checked. The criteria are: are they observable? are the objectives sequential? do they build up the skill gradually? and can we visualize a method of evaluation? Based on these criteria, the list in Table 3 seems reasonable. If they were not, then the objectives and evaluation procedures should be reworked until mutual

Table 2: Some teaching-learning environments that are available

1. Lecture
2. Sender directed discussion
3. Student centered discussion
4. Discussion/quiz/module: students prepare
5. Individual assignment
6. Group assignment
7. Small group problem solving
8. Pair discussion
9. Instruments, questionnaires to be completed by student
10. Everybody share tutorial
11. Examinations
12. Worksheets
13. Textbook
14. Self-paced - learning via notes
15. Self-paced - learning via slide/tape
16. Self-paced - learning via programmed text
17. Self-paced - learning via audio and text
18. Games
19. Case study
20. Problem based learning; learning on a need-to-know basis
21. Simulations
22. Demonstration
23. Fish bowl demonstration; some observers
24. Traning groups (where the facilitator is key)
25. Developmental group (no facilitator)
26. Structured experiences
27. Laboratory

Table 3: Learning Objectives for Creativity

- given an object, as a group of about six you will be able to generate at least 50 attributes or uses in five minutes.
- as a member of a brainstorming session, you will refrain from elaborating excessively, judging, and criticizing.
- given a situation, as a group of about six you will be able to generate at least 50 ideas in five minutes.
- given an object or a situation, as an individual you will be able to generate at least 50 ideas in five minutes (or write out 50 ideas in 10 minutes).
- given a brainstorming session, you will be able to recognize silences and negative feelings and to cope positively with these such that the flow of ideas continues.
- given a brainstorming session which is faltering, you will be able to use one of the triggers to get the flow of ideas started again.
- from your experience with brainstorming, you will be able to describe your preferred style and use of triggers.
- given some of the many names and terms used to describe brainstorming, you will be able to list the advantages and disadvantages of each and to relate these to brainstorming.
- given a group who have not experienced brainstorming before, you will be able to instruct them in the techniques.
- as a leader/facilitator of a brainstorming session, you will be able to maintain the brainstorming atmosphere and the morale of the group and to facilitate their producing 50 ideas in 5 minutes.

compatability has been achieved. Following this example through, to select an evaluation method or instrument Buros (1974) provides a host of tests, but we have not found them that pertinent to either in-class instruction or for research. The Torrence test could be used. However, we have found that the students clam up when they try to dream up alternatives in a Chemical Engineering context although they can exhibit great mental imagination when considering non-technical situations. On the other hand we can

a. give the students a content-rich situation, such as a trouble shooting problem;

b. ask them to list 50 ideas that might be used to solve the situation, in about 10 minutes,

c. ask them to identify from the list the technical feasible and the most ridiculous idea,

d. require them to convert the principles behind that ridiculous idea into a technically feasible solution.

Hence, in this example, the task is broken into observable components each of which can be tested. An example development for the topic creativity is given elsewhere (Woods (1983)g).

Although this example has focussed on creativity, the same principles can be applied to other skill development. Schoenfeld et al. (1981) and Mettes et al. (1981) illustrate methods that can be used to evaluate the application of heuristics and the application of a problem solving strategy. They clearly identify what is wanted and revise the "want" statement until a measure for success in achieving that objective can be identified. Examples are given in Tables 4.

The medium to be used should be chosen. Too many of us think of the lecture and the textbook as being the prime way of teaching and learning (and a written examination as being the prime way of evaluation). However, from the explore step discussed previously and the ideas given in Table 2 we should consider alternatives. Some example objectives and ideas about media are given in Table 5. A matrix we use at McMaster for some problem solving components is given in Figure 4. Mettes et al. (1981) use a matrix format to highlight the interaction between the objectives and the media.

In Figure 4, for each learning objective a tentative selection of a suitable medium is identified by a circle. Then, we consider the effect of the individual student's learning style, types of materials we could create and the environment to decide on the most appropriate medium. Our choices are indicated by shaded circles. Concerning learning style, some students prefer the visual mode, some the symbolic and some the verbal. For some topics, this preference may not make much difference. However, for "how to draw diagrams" or "how to choose symbols" we have found that these differences have a startling effect on the choice of medium. Individual differences should also be expected for some but not all of the tasks in the problem solving process. For example, all students perform the task and produce the same products for

Table 4: Some Examples of Objectives and Evaluation

Objective	Evaluation Procedures or Instructions
Increase awareness of the process	Added instructions to focus not on or not only on the answer. Rather ask for an algorithm of how the answer is obtained. In the context of the Whimbey pair method, the student should be able to identify appropriate responses for the listener and to list the characteristics of successful problem solvers that he/she should listen for.
Creativity	New instructions. The process is divided into components and each component is displayed and evaluated.
Developing plans	Added instructions: Prepare a Polya plot or a structural matrix or a reverse tree diagram.

Table 5: Comments about Medium & Objectives

Topic	Medium
Define the problem	Everybody-share environment works extremely well.
Explore the problem	Written hints plus example practice plus application plus freedom to develop own style.
Plan	Written hints plus example practice plus application. During some parts of this, the everybody-share environment is very useful.
Look Back	Written material; some brainstorming; useful to use everybody-share tutorial to explore the variety of related problems that can be solved now.
Expert's Procedures	In-class sender-directed problem solving, in-class expert works sample problems posed by students, written example problems, written conversation between the Devil's advocate and the Engineer.
Creativity	A small group of six can draw from its diversity of background a rich set of different ideas pertinent to any area. Gradually reduce the size of the group.
Strategy - we assign a six step strategy of I want to and I can, Define, Explore, Plan, Do, Look Back.	Written material plus poster in room. Use as logo on all materials handed out.
Confidence to describe verbally how you go about solving problems	Discuss with neighbour; pair of students work through simple problems with one student solving the problem aloud and the other student listening and reacting. Written material developed by Whimbey is excellent starting material.
Analysis	This skill is usually developed as individuals. Hopefully, group skills will eventually evolve.
Self evaluation	Individual worksheets; discuss with neighbour. Individual evaluation sheets coupled with group and individual interview with instructor.

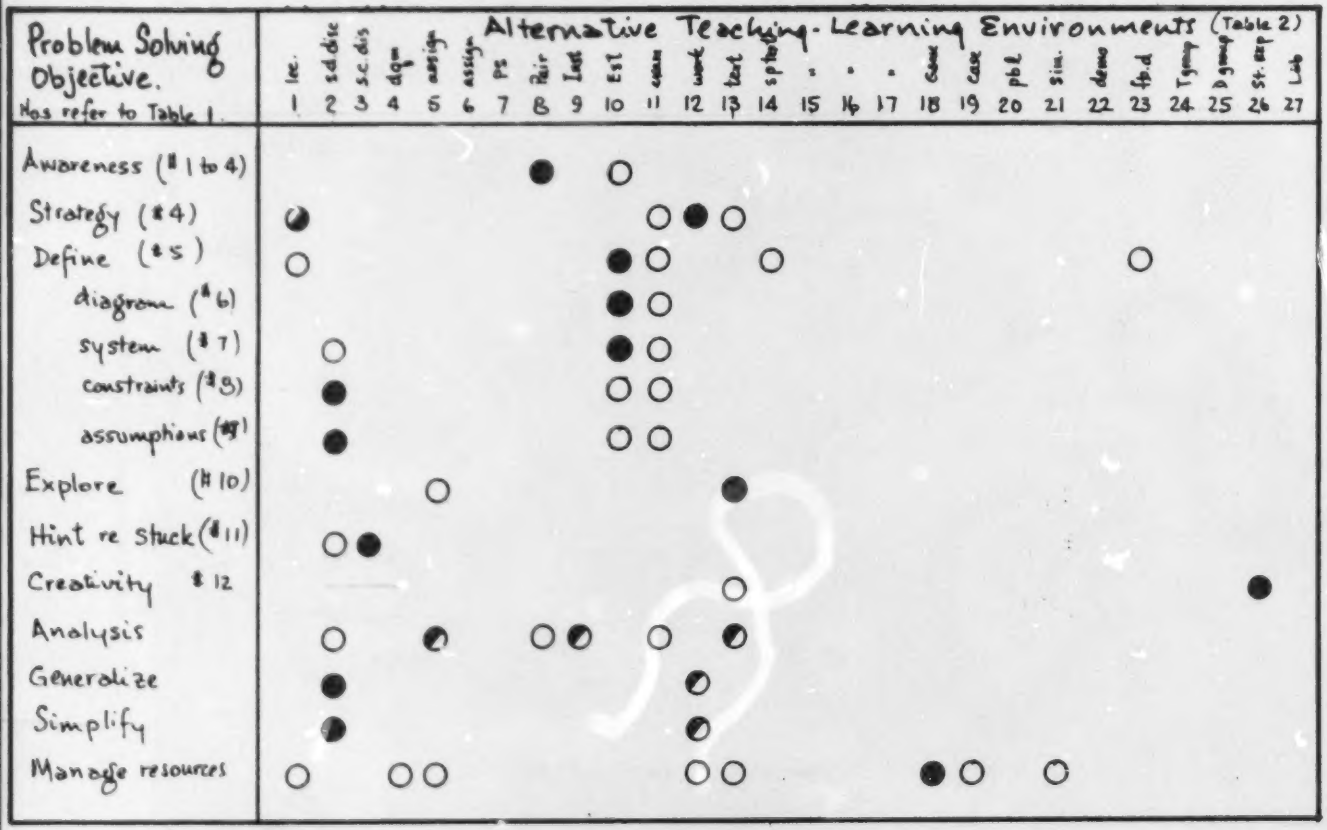

FIGURE 4: Integrating objectives with media or learning environments.

the task "how to analyze a given statement"; a medium should be chosen that will help promote uniformity. An example is the everybody share technique. On the other hand, the task "explore the problem statement to connect it to past knowledge" is performed differently by all students. Here the everybody share technique would be a disaster. To provide guidance as to where individual differences are most significant, the teaching and learning objectives given in Table 1 are coded S meaning "all should perform this task using the same process" and coded D for "all individuals need to be encouraged to develop his/her own style in achieving an objective".

For the actual creation of the materials, the format of the material will depend on individual style, and preferred model of learning and the objectives. Nevertheless, I like to include the following components:

1. definitions of the nouns plus some concrete examples.
2. learning objectives (hopefully in behavioural terms).
3. a list of new concepts being introduced and defined.
4. a brief rationale for why these skills are worth developing and where they will be used.
5. an overview of how the unit will progress and develop.
6. some activity sheets (which I usually have duplicated on green paper) to differentiate in the student's mind activities, objectives and background enrichment).
7. some background references or reading material.
8. if exploration or experiential components are included then I like to have a student worksheet upon which he/she can summarize the extracted experience.
9. usually include a worked example if pertinent.
10. evaluative material so that learners can check progress.

The discussion so far has missed the link to learning skills. Three components are in learning skills: student's confidence that they can learn on their own, student's ability to extract the key ideas from lectures, workshops and textbooks and the student's/instructor's awareness of misconceptions held firmly by the students when they enter our course. Details of these concerns are given elsewhere: about self learning (Woods (1983)c), about extracting ideas (Mettes et al. (1981), Woods (1983)c) and about misconceptions (Larkin (1981), Resnick (1983), Woods (1983)h, Lin (1979) (1980), Clement (1977), Lochhead (1979)).. Undoubtedly, a course in problem solving requires that problems be chosen to be solved. The problem must be chosen to satisfy the objectives and lead towards the evaluation procedures. This is not a trivial task but this topic is too extensive to be discussed here. Details are given elsewhere (Woods (1981)).

The planning stage should also include decisions about the feedback and evaluative procedures and responses from the chairman and colleagues as to our plans. For example, the medium used, and mechanics of presenting the course can change because of these.

In summary,

4.1 write specific learning objectives,
4.2 create evaluation instruments and procedures,
4.3 create learning procedures and materials,
4.4 develop the internal course organization,
4.5 decide on feedback/evaluative procedures about the teaching-learning process, and
4.6 inform chairman, colleagues and students of our objectives.

IMPLEMENT AND EVALUATE

With a detailed plan as described above, the implementation is relatively easy. However, there are some other considerations. Is the change having any effect? Was it a worthwhile change to make? These are very important questions with two different answers.

a. Feedback for Improvement. Through ombudsmen and questionnaires we should continually monitor our courses so that we can improve, and so that we can use such information as one component in faculty evaluation. Some comments on this are given elsewhere (Woods (1983)i)).

b. Is it Effective? Naturally we want the components in a course to make a difference: to allow students to design a bridge, to be able to create a poem or to identify their values. When we make a change sometimes others ask "should we have that as a part of a course?" To answer such a question requires a well-designed comparison to illustrate that those who take the course possess skills that others do not. Examples abound (Larkin (1976), Mettes et al. (1981), Schoenfeld (1981), Harrisberger et al. (1976)). Guidance can be obtained from our local Instructional Development Center. In the context of problem solving, many feel obliged to evaluate "is it effective?". Today I do not feel we need to. True, there is research that needs to be done in cognitive psychology about many issues related to thinking and to improving problem solving. But for the basic issues - should we increase awareness? are strategies effective? can you teach creativity? can we improve problem solving skills? - I believe the evidence is in; the answer is yes. Hence, I think we should focus on providing a well thought-out learning experience in the area of problem solving.

Besides evaluation, a follow through experience is useful. When we decide to make a change we initially are making a contract with ourselves to carry out the task, to implement the change. But as time progresses sometimes initial enthusiasm wanes, all the necessary resources may not be forthcoming, and some of the student feedback is undoubtedly negative. To carry us through the gloomy days it is wise to set in place some follow through components. These can include:

a. a written contract we make with ourselves showing short range and long range goals and target dates for completion.

b. a reunion of conference participants six months after a workshop to share experiences and progress.

c. identified targets and persons to whom materials will be sent. Often a person from the Instructional Development Center is a willing and useful

resource person to fill this role.

d. checking through each of the five summaries occasionally to ensure that none has been neglected.

In summary,

5.1 devise evaluative and feedback instruments and procedures,
5.2 consider, but do not feel obligated to include, comparison studies to prove that the change was effective,
5.3 create follow up mechanisms to help maintain the enthusiasm.

ACKNOWLEDGEMENT

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APPENDIX

Table 1: Teaching & Learning Objectives for Problem Solving

1. To become aware of the process whereby you solve problems. (S)

2. To be able to verbally describe the process whereby you solve problems. (S)

3. To be able to write out the process whereby you solve problems. (S)

4. To be able to: - state the steps and substeps in a strategy to solve problems.

   - state the limitations to a serialistic application of such a strategy.

- state the relationship between analysis, creativity, decision-making and generalization and the steps and substeps.

- state the prerequisites.

5. Given a textbook problem statement, to be able to correctly identify the unknown or goal. (S)

6. Given a textbook problem statement, to be able to draw a "good" diagram. (S)

7. Given a drawing or sketch pertinent to the problem, to be able to correctly identify the system consistent with the information given. (S)

8. Given a textbook problem statement, to be able to identify the stated constraints and to list reasonable inferred constraints. (S)

9. Given a textbook problem statement, to be able to identify the assumptions and simplifications to be made. (S)

10. Given a textbook problem statement, to be able to identify key trigger words that relate to the assumptions or background fundamentals. (D)

11. Given a problem solving situation where you are stuck, to be able to identify where you are, where you want to go and the obstacle or obstacles that are preventing you. (S)

12. To develop the skill necessary to complete the remaining four steps of the strategy:

    - to create, analyze, generalize, simplify, (D)

    - to manage resources, (D)

    - to see structure in knowledge, (D)

    - to develop the cognitive base, (D)

    - to identify personal preference, (S)

    - to be able to shift the data base, (S)

    - to learn heuristics and develop personal skill at applying them, (D)

    - to learn quantitative techniques and development personal skill at applying them. (S)

    Note that for each of these there are many levels of development.

13. Given a real, non-textbook problem, to be able to define the real problem to be solved. (S)

14. Given a problem to be solved, recall the stated problem solving strategy and elements and apply these to solve the problem. All the data necessary to solve the problem may not be given in the problem statement. (S;D)

15. Given a situation where it is not evident that a problem solving strategy is required, identify when the strategy and elements should be applied, then show comprehension as in level 14. Examples include:

    - detective problems (S)
    - personal problems (D)
    - community problems
    - trouble shooting problems (where the strategy needs to be applied several times)
    - plant improvement situations
    - writing a report
    - group problem solving
    - experimentation

16. To analyze what you do when you apply the given strategy and identify personal preferences about steps and elements. (D)

17. To develop your own strategy for solving problems. (D)

18. To develop an ability to solve problems effectively as a member of a group. (D)

Review Articles

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General Education in the University

Getting at the Core: Curricular Reform at Harvard. Phyllis Keller, Cambridge, Mass., Harvard University Press, 1982. ISBN 0-674-35418-4. US$15.

There is nothing like financial stringency for revealing the priorities of a community. As all around Australia institutions are being compelled to shed excess fat and unnecessary adornments, the underlying power structures, motivations and ideologies are being exposed. One of the more prominent victims of the current economic squeeze is the university. In a recent public speech the Vice-Chancellor of the University of Sydney said that his university required an immediate transfusion of $5 million in order to remain alive. Other Vice-Chancellors have been less bold and have sought to preserve their traditional autonomy by wielding the pruning-knife themselves on their own institutions.

Many cuts have been made in the University of New South Wales and more are being contemplated and while all have raised protests of varying volume from the victims perhaps no issue has caused more prolonged and heated debate than the status and future, if any, of the general education programme. Alone of all the universities the University of New South Wales requires non-Arts students, with a few exceptions, to take a number of units of general education as part of their undergraduate degree. The most that any undergraduate is required to take is three 56-hour units so that general education takes up no more than about 6% of anyone's first degree programme. Originally the intention was that the general education requirement should apply to all students so that Arts students were required to do courses in the Sciences and non-Arts students courses in the Humanities. Nowadays the requirement only applies to non-Arts students.

In the early days the general education programme, offered largely by the Department of General Studies, was of a traditional nature: Philosophy, History, English; in the early 1970s the Department expanded its staff considerably and began to put on a much wider and more imaginative programme which consisted of courses centred on issues and topics rather than discrete disciplines. The heyday of the Department was in the middle 1970s but since 1976 there has been a steady decline and by the end of 1983 half the permanent staff will have left and not been replaced.

A number of Committees have investigated the general education programme and canvassed the opinions of all the faculties on the subject. Reports have been prepared and travelled along the tortuous path which leads from sub-

committee to sub-committee right through to the University Council. The process has now taken some three years and each time a report has reached the Council it has been sent back for clarification or re-writing. So far no decision about the future of general education has been made; to be more accurate no decision has been made de jure, but the haemorrhage of staff from the Department of General Studies is equivalent to a de facto decision by, let us say, the Vice-Chancellor's Advisory Committee, that the general education programme be allowed to die quietly without anyone having to make any public and possibly controversial pronouncements. Another three years of committees and referrals back and forth and there will not be any programme to make decisions about. Cunctando destruxit rem, as the Romans did not say about Fabius.

And so to the Harvard Core Corriculum which is the subject of Phyllis Keller's excellent book, which should be required reading for all who have any interest in what universities should be about. Your reviewer's interest in this book arose from an article published in the campus news-sheet by Vice-Chancellor Birt under the rubric "It seems to me ..." Professor Birt wrote:

> I believe - very strongly - that it is important for universities to recognize the value of such a planned educational program; for my part, I see it as a preparation for citizenship, and for the intelligent and socially responsive exercise of specialist skills (as a doctor, or accountant, or engineer, or whatever). Hence my own interest in, and enthusiasm for, the Harvard 'core curriculum', which, I suppose, comes nearest to being the model which I hope will be adopted ... The proposals for "contextual studies" go some way to expressing my own idea of an effective program in general education - and therefore I support it.

In order to compare UNSW's proposed 'contextual studies' with Harvard's core curriculum it is necessary to know what the latter comprises and this is what Ms. Keller describes with great clarity. Getting at the Core does much more than give details of the core curriculum; it goes into the history of Harvard's educational philosophy for the past hundred years or more and how the implementation of that philosophy has changed with the changing times.

The foundations of the core curriculum were laid by Charles William Eliot who was Harvard's President from 1869 to 1909. 'The elective system', writes Keller, 'was his key device. Prescribed studies had imprisoned both faculty and students in a lockstep of teaching and learning. If this were removed ... the faculty would be free to introduce new subjects, offer advanced work, pursue scholarship and science research.'

Inevitably, in the long run Eliot's policy led to accusations that Harvard was being ruled by dilettantism and turning out graduates who knew less and less about more and more. Eliot's successor Lowell, a more orthodox President, sought to put Harvard back on the straight and narrow path. He did this, not by bringing back 'prescribed studies' but by insisting on the two complementary principles of 'concentration' and 'distribution'. 'Concentration' implied that each student must have a major study to be followed in a progressive and cumulative fashion; 'distribution' meant that students were obliged to follow six full-year courses chosen from three fields outside their main area of major study. Keller notes that Harvard did not (and does not) stand alone in its commitment to general education; it shared with Chicago and Columbia the perception that the University had an obligation 'to educate students for something beyond vocations and occupations' and to transmit 'a common intellectual culture or language to a heterogeneous student population and of overcoming the fragmentation of knowledge symbolised and generated by academic

departments'.

Action provokes reaction. In the immediate post-Second World War days there was an understandable revolt against prescription and in favour of free-wheeling democracy. A loosening of the curriculum followed which led eventually, according to Keller, not to a 'common core' but a smorgasboard of electives. In the 1970s, there was another reaction, a demand for a return to order and prescription - understandably, in the light of the massive student unrest of the late 1960s. In 1976 the Dean of the Faculty of Arts and Sciences, Henry Rosovsky, produced a report titled Undergraduate Education: Defining the Issues, exactly the sort of document of which there is such a pronounced dearth in Australia today; in it he gave the following description of an educated person.

1. An educated person must be able to think and write clearly and effectively.
2. An educated person should have achieved depth in some field of knowledge. Cumulative learning is an effective way to develop a student's powers of reasoning and analysis, and for our undergraduates this is the principal role of concentrations.
3. An educated person should have a critical appreciation of the ways in which we gain and apply knowledge and understanding of the universe, of society, and of ourselves. Specifically, he or she should have an informed acquaintance with the mathematical and experimental methods of the physical and biological sciences; with the main forms of analysis and the historical and quantitative techniques needed for investigating the workings and development of modern society; with some of the important scholarly, literary, and artistic achievements of the past; and with the major religious and philosophical conceptions of man.
4. An educated person is expected to have some understanding of, and experience in thinking systematically about, moral and ethical problems. It may well be that the most significant quality in educated persons is the informed judgment which enables them to make discriminating moral choices.
5. An educated person should have good manners and high aesthetic and moral standards. By this I mean the capacity to reject shoddiness in all of its many forms, and to explain and defend one's views effectively and rationally.
6. Finally, an educated American, in the last third of this century, cannot be provincial in the sense of being ignorant of other cultures and other times. It is no longer possible to conduct our lives without reference to the wider world in which we live. A crucial difference between the educated and the non-educated is the extent to which one's life experience is viewed in wider contexts.

By the time the Report was published Rosovsky had already set up a Task Force on the Core Curriculum whose members included a political scientist, two natural scientists, a historian, a philosopher, an art historian and two students. The administration was represented by Phyllis Keller. From 1975 to 1978 the Task Force canvassed opinion among faculty and students and in May 1978 the final version of the Core was approved by Faculty by a majority of three to one. The new curriculum was introduced by instalments and it was not expected that it would operate fully until 1983.

Essentially the new system demands that every student shall devote one quarter

of her/his degree to courses chosen from the core curriculum. The student has to take eight courses selected from five areas, namely Literature and Arts, Historical Study, Social Analysis and Moral Reasoning, Science, and Foreign Cultures. There was in fact a total of ten courses divided unequally between these five areas but it was assumed that a student would be able to claim two exemptions by virtue of her/his work in her/his 'concentration' or major study. This is an important point because it means that at Harvard no course which has an immediate bearing on the student's professional study can count as part of her/his 'general education'. All students are thus compelled to go outside their 'concentrations' and to do so in an ordered and prescribed way. This is not to say that there is no choice, there are plenty of electives but they are all carefully selected and all fall within one of the five areas already mentioned. It should be emphasised that the electives are not simply ordinary run-of-the-mill courses as given to students enrolled in the faculties concerned; they are designed to fit the needs of those who are not intending to specialise in that particular subject.

There was much debate as to whether Expository Writing and Quantitative Reasoning should be part of the Core. In the end it was decided that these two skills should be a mandatory part of every student's education but should not constitute part of the Core. Dr. Richard Marius's evaluation of the literary problem at Harvard as told by Keller is worth repeating: Harvard freshmen, in his opinion 'tended to view certain forms of punctuation - the comma and semi-colon in particular - as decorative adornments rather than useful devices in a sentence. And the discipline of spelling apparently struck many students as an intolerable shackling of the human spirit'. Marius also complained of the students' inability to argue logically. Freshman papers, he said, often 'start with one thing and end with another, and the road in between is marked by depression, confusion and general clutter', There is, indeed, no new thing under the sun.

To sum up; at Harvard there is a long tradition of general education; the faculty is entirely in favour of general education, the question being how, rather than whether it should be implemented; the core curriculum occupies 25% of a student's undergraduate programme; no electives may be chosen from the student's own faculty. Contrast this with the situation at the University of New South Wales. At Kensington there has been a short, ill-defined and, now, rapidly diminishing commitment to general education; the professoriate is, by and large, opposed to the concept; only a proportion of students are required to do 'general studies' (which is not quite the same thing as 'general education') and at most it only occupies 6% of their undergraduate programme; at Harvard general education is an integral part of the programme while at Kensington 'general studies' are inserted almost randomly into the interstices of a student's time-table; at Harvard the Core Curriculum is given the full support of the University while at Kensington the Department of General Studies will soon have lost half its full-time staff over a seven-year period.

The General Studies requirement has been under scrutiny by a number of committees, the last of which recommended that the programme be divided into two segments: 'contextual' studies and 'elective' studies. 'Elective studies' were courses which could be chosen from virtually anywhere in the University; 'contextual studies' should deal with 'modes of critical thought relevant to the evaluation and development of the knowledge base ... the social context and ethical responsibilities ... and communication and other skills relevant to the tasks and purposes (of the student's programme)'. Subsequently, it was decided to eliminate 'elective studies' and to leave only 'contextual studies' and this, as far as anybody knows, is the current situation. The

decision as to what does or does not constitute a contextual study is to be determined largely by the student's own faculty under the monitoring eye of an ad hoc committee of the Professorial Board rather than, as hitherto, the Board of Studies in General Education on which the Department of General Studies as well as all concerned faculties had representatives. From what has been said it will be clear that the proposed programme of 'contextual studies' is about as far removed as can be from anything that could be called 'general education' let alone a Harvard-type core curriculum; indeed, the ingredients of contextual studies would be regarded either as Expository Writing or as an integral part of the major study.

The question remains whether a general education is a mere adornment, a luxury which a cost-conscious administration can no longer afford, or even an irrelevance in this age of swift technological change. I do not believe so. On the contrary I believe it is today more important than ever that people are aware of the context and consequences of what they do.

The rationale for a general education must always be something like that put forward by Rosovsky and quoted earlier; it is based on the belief that no student should leave a university campus without having acquired some knowledge of her/his social and political environment, the interaction of science, technology and society, and the contribution of philosophy and the creative arts to society. Such an aim cannot be achieved if general education is reduced to a random choice of one or two electives from the entire offering of a university. It can only be achieved if there is directed choice, that is to say choice within a framework such as Harvard's five areas.

A general education is not a luxury. There are all kinds of pragmatic as well as philosophical reasons why graduates would benefit by receiving such an education. It would equip them to be not only better citizens but also better professional people. A deeper understanding of the workings of society, of the individual within society, of the relationship of Australia to the outside world, and of our own and other people's cultures cannot be anything but an asset to anyone who wishes to play an effective part in any walk of life.

There are those who say that Australia will lag even further behind in the technological race if she does not devote more educational time to things mathematical and scientific; the new Minister for Science and Technology takes a different view. Commenting on a statement in the Myers Report he writes

> This reflects the often-expressed concern in the business world that too many students are undertaking 'soft' subjects such as literature, philosophy and political science rather than 'hard' ones such as mathematics, physics and chemistry. This reflects the naive view that exact sciences are rigorous and studies based on value systems are not. No doubt the humanities are taught in an insufficiently rigorous way ... but Australia's future will depend as much on its politicians, writers, artists, and humanities teachers as on its engineers and chemists. Our primary emphasis in education ought still to be on the general rather than on the specific and vocational.

There is a certain ambiguity about this statement; it is not clear whether Mr. Jones wishes the humanities and social sciences to be given just as much support as the physical sciences or whether he is advocating the giving of a general education to everyone, thus creating a body of people who are both literate and numerate and, more importantly, socially aware; the latter is

certainly the version which I would support.

Given that many of the ills of the world have arisen from blinkered specialization, what is to be done? One solution is not to favour science and technology over the humanities and social sciences but to keep them separate; another is to ensure that all students have a taste of both; and yet another is to make a planned fusion of the two. On the whole the Harvard core curriculum is an example of the second solution. Harvard's ideal is to produce well-rounded, civilized graduates; literate scientists, numerate literati, cultured cosmopolites. This is a fine concept and would have done well for the more leisured world of the nineteenth century which is its spiritual home; it is not, however, adequate for the world of this fin-de-siecle. The mere encouragement of both the arts and the sciences in separate compartments is also unsatisfactory. What is needed now is the third solution: a fusion, a return to the days when the Greek word techne stood for both art and technology and when there was not even an elitist division between science and technology.

Exactly what shape this third solution, this new synthesis, should take is not yet clear and will only become so after much experimentation. There are, however, two possibilities which could be explored straightaway. The first is an up-dated version of the Harvard core curriculum on the lines of what the general education programme at the University of New South Wales would look like if its organizers were given sufficient resources. It would be based on a 'distribution-elective' system, part table-d'hote part a la carte, in which students would be asked to choose two courses from each of four broad areas, namely:

A The Individual and Society

B Australia and the World

C Science, Technology and Civilization

D The Creative Arts

The programme would be the equivalent of one year's undergraduate study but would not necessarily be taken within a single year. Experience shows that students tend to benefit more from general education courses taken in the later years of their undergraduate life. Parallel to this one could experiment with what one might call a 'technological Arts degree', an undergraduate degree which would be the modern equivalent of what the medieval university offered. In such a degree 'general education' would not be the icing on the cake, it would be the cake itself. It would be a multidisciplinary degree which would equip the graduate with a grasp of the fundamentals of the physical sciences and engineering, exposure to philosophy and the fine arts, a grounding in social sciences and management techniques, as well as 'hands-on' experience of computing and workshop practices. A four-year course could incorporate a multi-disciplinary design project. In days gone by it was thought sufficient for the generalist in industry and the public service to have an Arts degree in some combination of history, philosophy, politics and economics. This is no longer valid. Today we need people who can move easily across the disciplines and make decisions which require technical, social and aesthetic matters to be taken into account.

Whatever happens it is to be hoped that the experiment in general education in UNSW which is potentially superior to that offered at Harvard - at least in concept - will not be allowed to be killed by a combination of Philistinism

and short-sighted cost-benefit analysis. I was once asked whether I could prove that a graduate from this University earned more than a graduate from another university as a result of having taken General Studies; my reply was to ask if that was how the value of a university education should be judged. Anyone who thinks that such a question is worth asking should read Phyllis Keller's book.

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Distance Learning in Higher Education

Learning at a Distance: a World Perspective. Edited by John S. Daniel, Martha A. Stroud and John R. Thompson. Edmonton: Athabasca University, 1982. 342 pp.

Materials for Learning. Janet Jenkins. London: Routledge & Kegan Paul, 1981. xii & 209 pp.

Education of Adults at a Distance. Edited by Michael W. Neil. London: Kogan Page with Open University Press, 1981. 270 pp.

Distance Learning and Evaluation. Edited by Fred Percival and Henry Ellington. London: Kogan Page, 1981. 334 pp.

Whether or not the title is grammatically sound, 'distance education' is now well established as a means of providing teaching resources and supporting learning in higher education. Unfortunately it is often identified, if not confused, with other educational strategies, notably 'open learning' and 'independent study', and the assumption is then made that educational technology or 'the application of scientific method and techniques in the design implementation and evaluation of courses' (Butts, 1981[a])[1] must be incompatible with distance education defined as 'an approach aiming to provide freedom for the student to do his own thing in his own way'. (p. 27) Far from being 'open' or promoting 'independent study' distance teaching in higher education is characteristically didactic. Indeed, Holmberg has frequently argued that the development of 'guided didactic conversation' is the appropriate solution to problems arising from a commitment to non-contiguous communication (Holmberg, 1981[a]). For Holmberg

> this didactic conversation consists on the one hand of real communication, which is the answering of or commenting on assignments and telephone tutoring, and on the other hand of simulated conversation ... a style (of course presentation) which implies asking the students to consider, compare and question matters of relevance and interest. (p. 38)

One of the issues confronted by many contributors to these Conferences is how such guided conversations can be developed in forms other than print (Waniewicz, 1982; Mitchell, 1981[a]). Since answers which involve broadcasting invariably also involve high production costs attention is increasingly being diverted towards opportunities for individual and small group interaction

through technological developments in 'narrow-casting' such as FM radio sub-carrier signals and audio-visual intercommunication by means of telecommunications (McConnell, 1982; Copeland, 1981[a]).

Whatever the medium employed there is, however, general agreement on the need for systematic planned interaction if distance education is to be effective at tertiary level. But as Daniel and Marquis (1979) have demonstrated in an influential paper, there are almost as many apparent optimal solutions in 'getting the mixture right' between interaction and independence as there are distance education systems themselves. For some, integrated face-to-face tuition in support of distance education is mandatory as a means of ensuring that independent study does not mean 'solitary confinement' (Smith and Small, 1982). Others seek ways to maximise the distance student's capacity to cope independently with teaching materials (Zimmer, 1981[a]), or build telephone teaching including verbal assessment of mastery tests directly into the tuition process (Cochran and Meech, 1982). Another recent and innovative development in Britain is that introduced under the title 'Flexistudy'. Freeman (1982) describes a system in which distance education materials produced centrally by the British National Extension College are provided to autonomous regional colleges which then take total responsibility for both the correspondence and support tutorial teaching of locally enrolled students. In this case distance between teacher and student is modified but that between the course production and course implementation processes is extended so as to ensure a quality of multi-media teaching and learning materials which would be beyond the reach of the local colleges themselves.

Distance or 'apartness' in educational programs cannot therefore be seen merely in geographical terms. For Moore (1977) distance is a qualitative factor and should be regarded as a function of two variables. Whilst 'dialogue' is to be seen as a measure of the degree to which the communications medium employed permits 'learner-teacher interactions', structure is a measure of the extent to which the program and its curriculum provide for 'learner-teacher transactions' (p. 18). The vast majority of University credit courses offered at a distance in Britain and Australia are highly structured in content and provide little scope for negotiation on curriculum, and they also require a high degree of student/tutor dialogue, largely through the interchange of written assignments, telephone discussion and occasional face-to-face contact. This systematic and uniform structuring of content and required participation therefore means that credit course studies register relatively low in distance or 'apartness' as compared with the situation of the self-directed independent student pursuing his or her own private study interests. An interesting example of one way in which this pre-structured direction of students' activities may be modified is provided by Boud in a paper describing the involvement of distance students in setting their own objectives, planning their own programmes, identifying and using the resources of others and evaluating their own performance (Boud, 1981[a]). A set of course goals common to students and staff is identified and then each student takes one of these and develops around it learning materials which can be used by others. Deadlines for pacing completion of course tasks are negotiated and subsequently enforced, and students operate a process of self-assessment mediated by peers. It is hardly surprising to learn, however, that Boud's class comprised only 5 students all of whom were mature aged practising school teachers and despite his optimism that 'aspects of it could be used with larger classes if students were divided into smaller groups with about 6 students to each', practitioners with large distance teaching programs are likely to be sceptical.

Another and broader attempt to provide for personal flexibility in a pre-structured system is analysed by Sewart (1982). Mediation is seen as an

integral and necessary feature of complex societies where intermediaries such as social workers and doctors are employed although their primary concern is not for the system itself but rather for the individual. Sewart suggests that similar mediating services are required where the formal link between an educational institution and isolated students is confined to a course 'package', however well designed. Provided the analogy with social mediators is not stretched so far as to confine distance education advisors to bricks and mortar surgery attendance or home casework counselling, it serves to emphasise that successful 'dialogue' in correspondence-based teaching and learning is not likely to be that confined to purely instrumental assignment marking, or simulated conversation in print. Both Boud and Sewart stress the limitations of distance education reduced to long-range programmed learning, and indicate the need to approach course design and course implementation from the perspective of the student as well as from that of the course writer, or team of course producers or teaching institution.

The external student's individual frame of reference has not generally featured prominently in the literature. This is not to suggest that students have been regarded as unimportant but rather that the dominant perspective adopted has been that of systems analysis, in which student involvement represents 'feedback'. Distance learning from the point of view of the learner would seem inevitably to have a secondary place in any system of distance education seen as essentially an 'industrialised' form of teaching and learning: 'a method of imparting knowledge, skills and attitudes rationalised by the application of division of labour and organisational principles' (Peters, 1973). The focus of writers' attention has, rather, tended to concentrate around two organisational subsystems -- the institutional management structure (Kaye & Rumble, 1981[b]) within which a student subsystem 'admits students, allocates them to courses, local centres, tutors and counsellors as required, collects their fees ...', and the course management structure 'concerned with the design, production, distribution and reception of the teaching materials used by the institution' (Kaye & Rumble, 1981[b]).

Heavy emphasis on organisation and management and on course design in distance education persists in the comprehensive publication containing the advance papers for the 12th World Conference of the International Council on Correspondence Education (Daniel et al., 1982). Despite being published under a resolute title, Learning at a Distance, a World Perspective, a review of the contents suggests that less than 15% of the 112 papers actually address student learning as their major topic. Almost half of the other authors focus more specifically on course design and uses of various media for teaching, whilst another 30% address aspects of institutional structure for the provision of centralised or decentralised course delivery. Amongst the remainder there are, inevitably, a few papers still defiantly promoting the equivalence, or even the superiority of, off-campus student performance. Relatively few in number, the papers devoted to student learning in this collection are high in interest and quality. Marton and Svensson (1982) introduce the relational view of study skills developed as part of the Goteborg School's work on student approaches to texts and the situational context of learning. This it seems, has particular significance in relation to the disparate contexts from which distance students participate in non-contiguous communication with their tutors. For the phenomenographers, represented here by Marton and Svensson, learning represents a 'transition from one conception of a particular aspect of reality to another' (p. 97) which perception contrasts markedly with the other Swedish perspective presented through Holmberg's notion of the guided didactic conversation. An approach to student learning from the learner's perspective is further developed in a paper from Morgan and Taylor (1982) who use their base in the British Open University to emphasise that 'the overall

content of students' experience of learning must be considered in attempting to improve student learning, besides the specific teaching devices incorporated in the correspondence text' (p.103).

Since both articles start with the distant student's perspective in mind it is scarcely surprising to find a close coincidence in the conclusions of Morgan and Taylor on the one hand and Boud on the other. It is insufficient, in Morgan and Taylor's view, to rely on inserted-text questions and self-assessment questions which manipulate the learner to become more actively engaged in studying. They insist on the need for knowledge of learning as students experience it as the basis of improved course design, and argue that this knowledge can then be used to lead the student 'to adopt learning approaches appropriate to particular and differentiated study tasks' (p. 105). Boud, however, may have gone one step further by stressing the importance of student interdependence in defining these appropriate study tasks themselves.

Janet Jenkins' book Materials for Learning: How to Teach Adults at a Distance directs attention back to a consideration of distance education course design and development. It is presented quite straightforwardly as a Handbook for the production of effective teaching materials but also, and importantly as the publisher's introduction stresses, 'it is a practical book aimed at people actively involved in nonformal education, and will be particularly useful for third world educators'. Academic staff planning distance education courses in Australian higher education institutions might well react sensitively to blunt statements such as 'Muddled prose is often simply the result of muddled thinking', however incontrovertible. Nevertheless the clarity and directness of style and purpose, systematic structure and wealth of illustrative material drawn from the author's wide international experience are the basis of the book's strength. The same qualities also make it very readable and this should ensure its widespread use in many parts of the world.

Readability, however, is not an obvious feature of Education of Adults at a Distance, a report of the Open University's 10th Anniversary International Conference edited, and with a substantial commentary, by Professor Michael Neil. Like the CEAD Conference itself this book is hard work and less satisfying in its outcome than in its promise. From a list of 78 papers presented at the CEAD Conference 10 have been selected for inclusion in full. Neil's commentary, the outcome of a difficult synoptic task covering the other 68 papers is heavy with acronyms in which 'DL's' operate in 'DC' and 'LDC' national contexts with 'EAD' as their unifying common purpose. In addition to celebrating the 10th birthday of the Open University the single avowed intention of this Conference was international collaboration, and whether advanced on a regional or global basis there is, in this book, no shortage of reasons, economic, political or educational, why collaboration should occur. For Lord Perry the advantages are clear. 'I make a course and give it to you and you make a course and give it to me and we both get two courses for the price of one' (Perry, 1981b). But he also recognises that what appear to be entrenched attitudes of institutional autonomy, academic pride and even fear of redundancy make such exchanges frustratingly hard to establish in practice (p. 10).

From the perspective of the single-mode distance teaching university which dominated CEAD, the logic and the benefits of mutual exchanges seem as self-evident as the advantages of such international collaborations themselves. There may, however, be an alternative perspective not visible at CEAD but significant in Australian higher education where distance teaching is offered from mixed-mode rather than single-mode universities. In this situation academic equivalence of the two teaching modes rests on having the same degree majors offered both to on-campus and off-campus students, with common course objectives being met

by distinctive delivery methods for each mode. Introduction of specialist courses from other institutions is difficult to match with this operational principle. Equally importantly, many mature age students wish to move readily from off-campus to on-campus study and back again as their personal and contextual circumstances change and they must therefore be assured of the portability of their credits within their own institutional degree structure as well as beyond. With this consideration of student flexibility we are brought full circle to the student's perspective introduced earlier through the papers of Marton and Svensson and of Morgan and Taylor. In Neil's book the contributors to CEAD are represented as being more concerned with the delivery of study materials than with learning outcomes and Neil's synopsis of the CEAD discussion on learning seems to derive from delegates' concern about selection of media, methods for creating teaching material and delivery systems.

> The learning we are trying to bring about involves instruction that is carried out by communicating knowledge, attitudes and skills to learners in such ways as to enable them to acquire, use, modify, adapt, extend and generally absorb them into the conduct of their everyday lives. (p. 99)

In this discussion the distant student's own perspective is scarcely visible.

By contrast to Neil's institutional focus, and Jenkins' course design focus the collection of papers from educational technologists edited by Percival and Ellington is quite eclectic. In addition to Boud's article it includes a series of professional and thorough formative evaluation studies of British Open University courses in process of revision, and other papers having, at most, a tenuous claim to inclusion in a publication devoted to distance learning. Between them, however, these four volumes cover a formidable amount of ground. The quantity of material is large and the range broad, the opportunity for confusion in terminology obvious and the selection for review inevitably partial. For final comment, however, I turn to Wedemeyer (1981) whose distillation of 30 years experience in non-traditional education appeared two years ago under the title Learning at the Back Door. For it is Wedemeyer who most tenaciously focusses attention on the learner at a distance and on learning as an essentially idiosyncratic and location-free process. 'The learner and his surround are the basic environment for learning. Put the other way around, learning is a phenomenon that occurs only where the learner is'.

NOTES

(1) Three of the four publications under review comprise collections of papers submitted for presentation at International Conferences, with 'Distance Learning' as their theme:

(i) The 15th Annual Conference of the Association for Educational and Training Technology held in Aberdeen, Scotland, 1981, and published as Percival, F. and Ellington, H. eds Distance Learning and Evaluation. London, Kogan Page. 334 pp.
For ease of reference papers from this collection are cited in the text as (Author, 1981a).

(ii) The International Conference on the Education of Adults at a

Distance held in Birmingham, England, 1981, and published as Neil, M.W. ed (1981) Education of Adults at a Distance. London, Kogan Page. 270 pp.
For ease of reference papers from this collection are cited in the text as (Author, 1981[b]).

(iii) The 12th World Conference of the International Council for Correspondence Education (now International Council for Distance Education) held in Vancouver, Canada, 1982, and published as Daniel, J.S., Stroud, M.A. and Thompson, J.R.eds (1982) Learning at a Distance: a World Perspective. Edmonton, Athabasca University/ ICCE.342 pp.
For ease of reference papers from this collection are cited in the text as (Author, 1982).

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Understanding Learning

Student Learning in Higher Education. John D. Wilson. London, Croom Helm/ New York, Halsted Press, 1981. ISBN 0-470-27153-1. 194 pp. Price £10.95.

Teaching is an activity which assumes an understanding of learning. Ten years ago little was known about how students in higher education tackle the academic tasks set by their lecturers. Research into teaching and learning concentrated on the process of teaching, on ways of improving techniques for transmitting information, and on the prediction of academic success at university. The normal process of student learning, the most widespread and fundamental activity in higher education, was a field left mainly to psychological research. Unfortunately it has proved difficult to extend the insights of the impressive body of knowledge dealing with general principles of human learning to what

students do when faced with, say, an essay on the causes of the French Revolution or a problem in particle physics. One of the reasons is that learning in an institution of higher education encompasses much more than can be explained even by sophisticated theories of problem-solving. The traditional research intentionally controlled out of its experiments naturally-occuring variations such as students' experiences of assessment and teaching, their interest in the subject-matter, and their own intentions in carrying out the learning task. It is now clear that these are among the crucial variables explaining different levels of understanding.

Today, research which examines how students approach realistic study activities in complex learning is an academic growth industry. It shows all the familiar signs: rapid development, terminological confusions, conflicting findings, competing 'invisible colleges', misunderstandings by non-practitioners of some of its ideas and, especially, a paucity of accessible summaries of its work.

In these circumstances non-specialists may find themselves in a situation similar to a first-year student faced with a 500-item reading list. Where do you start? Why are they saying contradictory things about the same topic? What are the important ideas and what are the trivial ones? Make no mistake about it: lecturers in higher education should become more familiar with this research. It speaks directly to their concern to help students develop that critical awareness of their subject which is a precursor to the extension of knowledge in a field. It has inevitable and immediate implications for how we teach.

John Wilson has bravely taken on the hard job of summarising and integrating the findings of research on how students learn. The emphasis of his book is on the main themes of the recent research: the concern with the process of studying itself; the shift away from a focus on how much is learnt towards an understanding of what is learnt; the idea that students' learning is a function of what they think is required of them - that students make decisions about how to learn; and the concern with the ways in which students in higher education develop as learners.

The central chapters of the book are those on approaches to learning (chapter 6) and styles and strategies of student learning (chapter 7). The first discusses the important work of Marton and his colleagues at Gothenburg. Wilson also looks at some subsequent extensions of this research in Britain. The Gothenburg researchers asked students to read academic articles and then asked them two sets of questions. One set was designed to test the quality of their understanding (not merely the number of points recalled); the other was about students' subjective descriptions of how they read the article. The results of these experiments are rapidly entering the mythology of teaching in higher education, often in debased form. Essentially, Marton identified two distinct approaches to how the articles were read from the students' introspections: the deep approach, where the student focuses on actively interpreting the meaning of the article; and the surface approach, focused on the demand to perform the task and on memorising the text rather than thinking about it. Students reporting the use of a deep approach understood the meaning of the article better. It is logically impossible for a surface approach to lead to full understanding, while a deep approach is a necessary but not sufficient condition for it.

The distinction has since been shown to apply, in a more general form, to how students in many subject areas tackle a wide variety of typical academic tasks in normal studying. It can be still further generalised to apply to more stable orientations to studying - whether a student is generally trying to

understand or to reproduce what is to be learnt in a course or department. Deep approaches are inextricably linked to more effective learning. It does not matter how 'effective' is defined: the connection remains whether grades, complexity or quality of outcomes, long-term recall, examination results, satisfaction with one's own performance, or self-rated progress are used as the criteria. Australian, Swedish, and British studies all point to this conclusion. Many of these researches were completed after Wilson's book appeared. The evidence is also clear that approaches to studying are highly sensitive to change. They are a function of the student's perception of what he is being asked to do. Unfortunately, while it is easy to manipulate assessment and teaching to produce surface approaches, it is harder to encourage deep approaches.

It is a pity that the author does not devote more attention to this basic distinction in approaches to studying, which is remarkably easy to misunderstand, as I know from trying to teach it. The misunderstandings lead to inaccurate extrapolations. Among the ones I have come across are that science students do not need to use deep approaches; that students who take deep approaches do not remember the facts; that deep and surface approaches are unchanging characteristics of individual students, so you teach each group differently; that surface approaches do not occur except in 'weak' students. Instead, Wilson engages in some picador work aimed at the methodology of the Gothenburg studies. Here, as at one or two other places in the book, the author has emphasised criticism at the expense of fuller explanation. The style is perhaps more appropriate, at these points, to a student dissertation than to a book aimed at teachers. In spite of these weaknesses, this chapter is of absorbing interest, and readers are sure to discover evidence which relates directly to how they teach their own students. I would urge them to read it in conjunction with another recent review of the Gothenburg work and its developments contained in Entwistle's Styles of Learning and Teaching (1981).

Chapter 7 of Student Learning in Higher Education takes us into the thorny territory of Gordon Pask's investigations of styles and strategies of complex learning. Modestly, Wilson says that 'It is not within the competence of the present writer to do justice to the many facets of Pask's work on learning' (pp. 132-133). Nevertheless, he provides an excellent critical summary of the main results and theories in a very readable form. This complements earlier reviews such as those of Daniel (1975). Readers are advised to steer clear of Pask's own writing unless they have masochistic tendencies. Pask distinguishes between operation learning (where the student concentrates on building understanding through procedures and logical relations within a topic) and comprehension learning (where the focus is on description, analogy, and interpretation in a wider context). Unlike deep and surface approaches -- with which they are sometimes confused -- both types of learning seem to be necessary for full understanding of complex subject-matter. An important practical issue is how and when to use each strategy: 'versatile' learners are able to use both appropriately, while students can also be shown to have general preferences for one style or the other. To complicate matters further, each of the styles has a corresponding 'pathology' of learning. An over-reliance on comprehension learning leads to extravagant generalisation on the basis of insufficient evidence. Operation learning may degenerate into an excessively narrow concentration on detail and facts -- the failure to see the wood for the trees.

These theoretical ideas are of significance for how we help students to learn more effectively. Recent evidence that stylistic preferences are related to personality suggests that we might usefully offer more variety than is

customary in many subject areas in the choice of teaching and learning methods. Pask's work on 'learning to learn' also lends support to attempts to make learners more aware of their learning deficiencies as a way of changing their attitudes and learning processes (see, e.g., Baird and White, 1982). The research of Gordon Pask is noteworthy for the contrast it embodies between the power of its theoretical ideas and the weakness of its empirical studies. Attempts to replicate his tests have often failed to produce meaningful results, while application of his concepts has been very fruitful.

The best of the remaining chapters of Wilson's book is the one on the moral and intellectual development of students. One of the reasons why it is hard to predict academic success in higher education is that students change during their experience of it. Knowledge of what these changes may involve is a valuable tool in the lecturer's armoury. The work of Perry, for example, shows how students may develop in their forms of thought from simplistic dualist thinking (right vs. wrong) through relativism towards personal commitment. Students at different stages will respond differently to the same teaching. Being sensitive to students' individual requirements should help them to develop as learners. Having said this, we should also be on our guard against labelling students as being at one particular 'stage of development' or having one particular way of learning. Wilson's warning in a later chapter should be required reading for lecturers:

> Most people are somewhere 'in the middle' with regard to any particular measure or trait. There is a danger that labels which conveniently summarise the extremes of dimensions, which are themselves psychological artefacts, may be attached to individuals rather than to particular behaviours which, in certain circumstances, individuals may manifest. (p. 137)

The caution, needless to say, could also be applied to the way we use commonsense categories of assessment as teachers.

Other chapters of the book deal with cognitive styles (a discussion which might have been more explicitly linked to that in chapter 7), the context of learning, student peer groups, and implications for theory and practice. The chapter which examines evidence on how the departmental context affects student learning is good as far as it goes, but it does not go far enough. It was written in 1979-80. Since then, research at Lancaster and at the Australian National University has shown that functional links exist between students' perceptions of teaching and assessment in academic departments and the approaches to studying their use. This chapter would have been more effectively placed after the discussion of approaches to studying in chapter 6, and a revised edition should incorporate the up-to-date findings, which have implications for course design.

Wilson's chapters on models of student learning and implications for teaching and learning are not the most successful part of the book. His discussion of Biggs's, Laurillard's, and Entwistle's partly-developed theories is of interest, but his own model is too inchoate and general. The practical implications, surprisingly, are presented rather briefly and in a tone of received objective knowledge, which may not be what the author intended. He is a better writer when he allows his personal feelings to show through.

Despite its generally thoughtful approach, the volume as a whole suffers from three main difficulties. The author has not entirely overcome his prejudice against qualitative methods of data collection and handling, methods which distinguish so many of the major advances in our understanding of how students

learn. They have their own forms of elegance and rigour. Nor has he always provided complete enough explanations of basic concepts to enable non-specialists to understand them fully. Finally -- and this is no fault of Wilson's -- the book simply does not offer a comprehensive review of the research field. This is by far its most serious weakness. My advice would be to read this book, but to buy the revised version which I hope the author is preparing. An increase in our understanding of how students in higher education learn has taken place in the last three years, and what we now know has even clearer implications for practice. In particular, educationally significant connections between student performance, approaches to studying, and perceptions of the academic context have been established.

In this last respect, Australian university teachers are perhaps more favourably placed than those in Europe and elsewhere when it comes to keeping up-to-date with the recent research. While much of the pioneering work was carried out in Europe -- at Gothenburg (Marton, Saljo, Dahlgren, Svensson), The Open University (Gibbs, Morgan, Taylor), Surrey (Laurillard, Hodgson), and at Lancaster (Entwistle and colleagues) -- the immediate future for the research area seems to lie with studies in progress in Australia. Important work is currently under way, to my knowledge, at Newcastle, Brisbane, A.N.U., Monash, and Melbourne. At Newcastle, for example, John Biggs, who has been involved in this field from the beginning, is currently exploring ways in which decisions about learning strategies can be matched to students' motivation patterns. At Melbourne, Beswick and Bowden are assessing the effects of combined learning skills/staff development programs on students' approaches to studying. The results of these investigations will be awaited with interest by all who are concerned with better teaching and better learning in higher education.

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Reviews

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Academia Becalmed: Australian Tertiary Education in the Aftermath of Expansion. Edited by G.S. Harman, A.H. Miller, D.J. Bennett and B.I. Anderson. Canberra: ANU Press, 1980. ISBN 0-7081-1364-8. 260 pp. $8.95.

The End of a Golden Age: Higher Education in a Steady State. Edited by E. Gross and J.S. Western. St. Lucia: Queensland University Press, 1981. ISBN 0-7022-1625-9. 144 pp. $26.

A New Era for Tertiary Education. Edited by T. Hore, P. Chippendale and L. West. Toowoomba: Darling Downs Institute of Advanced Education. 242 pp. No ISBN number; no price given.

A Time of Troubles. Edited by J.E. Anwyl and G.S. Harman. Melbourne: Melbourne University Centre for the Study of Higher Education, 1981. ISBN 0-86839-379-7. 181 pp. No price given.

These four books are all reports of various confabulations and conferences, mostly fairly high level, that have taken place in the last few years to consider the present sorry (?) state of higher education in Australia. The style is frequently bland and bureaucratic, a lot of punches are pulled in one degree or another; but just occasionally the blood shows through. The situation the speakers confront from various angles is one not unfamiliar in other parts of the world today: a barbarian government determined to treat education as just another part of the industrial system. If it can't show a profit, scrap it; or at least get somebody to take it over, sell off the surplus assets, and set up a holding company to make sure none of the kicking and screaming subsidiaries gets to know too much too soon about what's going on as the mergers are hurried through. Is this a passing phase or something that we have to live with for a long time? Have the morals and the methods of the Stock Exchange come to stay in higher education?

Quite a number of the speakers touch on this question, some face it head on; but there seems no consensus as to what might be coming next. No clear ideal of an educational system emerges from these many thousands of often eloquent words, the scatter of statistical tables, and the few marginal research studies. I found many sharp insights, much intelligent comment, several penetrating paragraphs, and quite a number of well orchestrated papers; but no overall convincing philosophy of education; little attempt to place the recent happenings in a long-term, meaningful historical context; little human

consideration of the people who keep the system going -- those at the blunt end of a stick of chalk; and hardly any mention of the micro-chip, its fearful progeny, and their possibly far-reaching effects. There is a little sociology in The End of a Golden Age and current events inevitably crop up throughout; but the long and deep view of the world which higher education claims as its special contribution to the affairs of society hardly gets a look in (with a few honourable exceptions). In a review of such a large number and such a diversity of papers it isn't feasible to deal with all the interesting points which abound. I propose instead to take just a few quotations and ideas, and use these as detonators to explore the shifting scene.

Academia Becalmed is the earliest of these books in point of time. It contains the papers given at a conference at ANU in the summer of 1978, together with a few pertinent pieces of the previous year's vintage. Right at the beginning of the introduction Grant Harman remarks that the sudden change of fortune in the mid-seventies 'caught many academics and administrators by surprise'. Apart from substituting 'most' for many, I would entirely agree. As I said earlier, the long view is not common in academia; though it is frequently claimed as one of academia's major contributions when a case is being made for the virtues and funding of higher education. In this volume occurs the only paper that has anything much to say about the supposedly central concern of the whole business -- teaching and learning -- when Ernest Roe makes a measured plea for attempts to improve these activities. Even he, however, is forced to admit:

> A recent study ... has brought home to me very forcibly something about tertiary institutions of which I suppose we are all aware but which mostly are allowed somewhat uneasily to sleep. It is the extent to which the decisions we make within institutions are political (in which I include economic), expedient, convenient and the extent to which they are not based on educational considerations. I know there are a score of excuses for this. Indeed when this kind of issue comes up for discussion people say that we are engaged in a struggle for survival or, to be less dramatic, a struggle for the equitable distribution of scarce resources.

He goes on to urge that whatever the daily struggle we should not lose sight of our ideals. We must cultivate a double vision, focussed both on the enemy over the parapet and the holy grail in the innermost recesses of our minds. And is it 'scarce resources' that have produced this siege mentality? I didn't notice academics any more inclined to look ahead in the years of plenty just gone by. A.H. Halsey (quoted in A Time of Troubles) makes the same point more generally:

> I would want to urge that our thoughts for the future should cease to be based on a futurology of extrapolation. Such a projection of past trends, apart from its intellectual triviality and whether or not it forecasts optimism or pessimism, is academically boring and politically evasive. There is an alternative futurology which is intellectually challenging and politically inspiring. It is to decide what future one wants, second to analyse accurately what present one has and third to work out the political, economic and social paths from the real present to the desired future.

How one would like to see Halsey's ideas being put into practice in Australian or any other higher education. It does happen at a few colleges here and

there; but the great majority of teachers persist in burrowing down their narrow subject tunnels and resist strongly the notion that they should break surface and take a look at the stance and proportions of the world in the bright daylight above.

In all the books, but especially in A Time of Troubles and in A New Era there is much exposition and discussion of the (apparently) eternal triangle: universities, CAE's and TAFE. The kind of confused debate that goes on over such institutions is not unknown in other countries and stems from the aforesaid lack of clear purpose. Because higher education itself has nothing much to say about overall organisation it leaves itself open to the kind of political 'divide and rule' which is currently apparent; to the constant struggle for status and the upgrading of qualifications in which all institutions engage willy-nilly. In A New Era Terry Hore, in a more percipient paper than most, emphasizes the way our vision of the future shapes both what we do and how we treat our students. It does not matter whether we articulate our aims clearly or leave them to be guessed at: the shaping process goes on inevitably. Why should we have a threefold division? Does it make any kind of educational sense? How does it relate to the present or future needs of society? Few of the speakers do more than glance at such questions. Instead, as Ernest Roe says, they deal mostly with questions that are expedient, economic, political, or organizational, as any gang of entrepreneurs might do, whether in the razor business or not. In this connection I found Grant Harman's "Notes on Possibilities for Multi-level Institutions" in Academia Becalmed of particular interest. One of the curses of our present system is that it consists too largely of horizontal institutions in which the sacred course and the mighty examination compel rounded individuals into square compartments. I would like to see more vertical colleges, as Harman suggests, with individuals and groups coming to study at all kinds of times and levels. This would involve having more institutions with a restricted subject base, but with a greater concentration of books and learning aids, and a much greater attention to what people want to learn rather than what teachers want to teach. With the help of modern technology such things are more than possible today; but they need a vigorous debate within higher education itself to justify them educationally. The universities, in particular, if they are to live up to the claims of their apologists (of whom there are a number in these volumes) must apply to their own operation the strict standards of research and thinking which they boast as their hallmark and which they recommend so strongly to everyone else and practise on everything else. Perhaps (I speak softly) a university is a concept that has had its day? Certainly most of the defences that are put forward here carry little conviction to anyone not already within the magic circle. But let us have the debate and let us have good educational research to found it on! Then, whatever the future, higher education should at least be able to be true to itself.

I mentioned earlier that one glaring omission in these books is any proper study of academics as people. In The End of a Golden Age there is a brief consideration of the sociology of the professions, together with a short research study of the academic profession in Brisbane, but the study misses out a lot of the things one would like to know and depends too much on people's own ideas about themselves. It exemplifies in many ways the kid-glove approach that too many people have towards universities and all that pertains to them. I would like to have seen far more contributions from practising teachers in higher education in these reported seminars and meetings, as one part of the fuller understanding of the whole process which we need, and also some really thorough study of the academics from the point of view of social psychology. Instead people mostly figure in a dehumanised fashion, as awkward statistics, interfering with smooth organisation. It is, of course,

difficult to combine the bureaucratic and the humane, but the effort is worth making.

Looking back at what I have written perhaps I may seem to have carped too much; but if so it has been for good reasons. Like Goldsmith's village schoolmaster, I love learning, and so am inclined to judge its faults severely. I think higher education is important; but it makes great claims -- and if it fails to live up to these claims it does itself a disservice. It must study itself, must base its pronouncements on its own best principles, and not yield too easily to every political and economic wind that blows. It must not just react in surprise and dismay after the event; but prepare its thinking and planning robustly to meet the future, so that it is ready for the ups and downs of fortune. The great expansion of the previous few years was actually a highly abnormal episode in academia: even a tiny knowledge of educational history will tell us that. It is significant that the Queensland papers refer to the recent past as a golden age. If I think of a golden age of painting, or of drama, or any other great expression of the human spirit, I think of periods when great practitioners were alive and great work was done -- like the Elizabethan era in British drama or the late nineteenth century in French painting. Higher education is also one realm of human expression: in however muddled a way, it is one of the growing points of the human consciousness. Was it therefore of great people and high achievement that the Golden Age editors were thinking -- or was it just money and numbers? I wonder.

Finally I think one may say that HERDSA can draw comfort from these books. There are plenty of lively minds pondering on higher education in Australia, but not nearly enough. There is much room for more and much need for massive research to be done so that myth and hunch do not have things too much their own way. And let people not be shy in their thinking!

Colin Flood Page

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Creating a Community of Inquiry: Conflict, Collaboration, Transformation.
William R. Torbert. London, John Wiley, 1976. ISBN 0-471-91655-1. 184 pp.

This book relates the author's attempt to create a summer school, which under the aegis of the U.S. Office for Economic Opportunity and in association with Yale University, set out to assist economically disadvantaged students to gain college admission. Torbert came to his position of founder and director of this summer school at the ripe old age of 22, with a background of study in organisational development. The school operated during 1966-68, and the book, written almost ten years later, was based on an extensive collection of notes, papers and tape recordings.

Torbert's personal aim was to create an atmosphere in which his school would

> transform itself into a real community of inquiry, a school trying to change in pace with its members' changing understanding of its mission and of their own needs.(p. ix)

To this end he attempted to permit his staff and students to form their own structures in line with their perception of their personal and intellectual needs. He emphasised the need for each of the individuals including himself to expose personal fears and ambitions and to cultivate an authentic (and functional ?) style of communication. His technique of action research involved forcing himself and his people to return again and again to basic questions of personal and organisational objectives, and to resolve these questions in practical situations not so much by simple democratic means (e.g. majority votes) as by working through areas of conflict in pursuit of enlightened unanimity. The book therefore oscillates in mood, with a dominant optimism and idealism frequently punctuated either by an agonising description/analysis/appraisal of the utterances and motives of the participants (not least himself) or by a statistical interlude wherein a group meeting, for example, would be described in terms of percentages of constructive remarks, etc.

Torbert concludes his book with an exposition of a theory of stages of organisational development. The theory was arrived at after the summer school experiment had ceased, and therefore awaits experimental support. It is derived by analogy with Erikson's theory of stages of personal development and envisages an organisation as moving through a matrix of behavioural, structural and spiritual (!) phases with growth in each phase from relational experimentation to successful activity to self-recognition. The theory permits an organisation to fail altogether in its early stages or to freeze (into a bureaucratic mould) at later stages. Movement through especially the later stages is dependent upon growing openness and self-recognition of the individuals involved and their ability to maintain and communicate their ideals. The theory is attractive as far as it goes, but it does not deal with the design of organisational structures for viability and self-renewal -- a vital question for any organisation which cannot provide open face-to-face communication between all of its members.

It is tempting to dismiss the book as hopelessly idealistic, given the author's ostensive task of converting a wild bunch of violent, illiterate street-arabs into college material. (The reviewer admits to having led a sheltered life, but some of the reported havoc among Torbert's group beggars the imagination.) But I cannot do that as long as the problem remains for societies: what to do with their economically, educationally and socially disadvantaged members. Torbert's solution may or may not be workable, but those we know to be workable are without exception morally repulsive.

At another level, one might criticise the author's endeavour as having been doomed by its organisational defects. It was arguably unworkable for an organisation to introspectively formulate its own ideals, objectives and procedures while operating with funds granted in the context of a higher-level program which had its own more rigid and narrower ideals. Alternatively, the structure which permitted one group of students and teachers to go through its process of development for a year, and then expected the survivors to absorb a new batch of recruits (ignorant of that development) under changed circumstances without damage to the original ideals, could be argued to be inherently unstable and badly designed. Again, one might suggest that the operation of the school was flawed by the lack of preparation of the staff, many of whom seem not to have understood what they were doing, to whom, or how.

But I prefer to commend the book on two levels: firstly as an outspoken celebration of those dreams and ideals which all educationists have (or should have) but are generally ashamed to confess; secondly as a graphic example of the kinds of organisational conflict in which well-meaning attempts to create

cohesion in a society have the effect of tearing it apart. These conflicts are cemented into our society so well that they become invisible, though their destructive power remains. (To take just one trivial example from the book, Torbert faced an irreconcilable conflict between his aim for students to develop through authentic self-expression and his responsibility to a college warden to keep the building intact.) Australian readers may find, as I did, that Torbert's effusive and emotional style grates upon them, and that his use of neologisms and jumbled prose is distracting. They may also find themselves sufficiently intrigued by the enormity of the problem which Torbert set himself to return to the book, as I did, a second and third time, with growing interest.

Paul Best
University of New South Wales

Browsings

A surprisingly neglected area in the higher education literature is that of curriculum and course design. Two welcome contributions are D. Rowntree's Developing Courses for Students (McGraw-Hill, 1981) and A.J. Romiszowski's Designing Instructional Systems (Kogan Page, 1981). The titles are indicative of the approach of each author; the latter will appeal to those who can interpret many boxes linked by innumerable arrows and expressions such as 'pre-prepared paths towards predetermined goals'.

There is also evidence of a revival of interest in professional education with the appearance of two new books from Croom Helm: P. Jarvis, Professional Education; and R.J. Brownhill, Education and the Nature of Knowledge. These should be read in conjunction with Phyllis Keller's very good account of the general education programme at Harvard, Getting at the Core (Harvard University Press, 1982), which is reviewed in this issue.

The significance and complexity of the ethical issues which can arise during the conduct of teaching and research are not sufficiently appreciated by many academics. T.L. Beachamp et al. have edited a useful collection of papers on the topic of Ethical Issues in Social Science Research (Johns Hopkins Press, 1982). The 1982 May/June issue of the Journal of Higher Education is entirely devoted to the topic of ethics and the academic profession and contains a good deal to interest anyone engaged in teaching or research.

There are many journals which we may not routinely scan but which often contain material of relevance to our work. For example, a recent issue of Scientometrics included papers on measuring the quality of scientific journals, judging research performance, and assessing academic productivity. It is widely held that judging the quality of research is a simpler task than judging the quality of teaching. S. Cole et al. in 'Chance and consensus in peer review' (Science, 214, 881-886, 1981) have produced evidence which challenges this belief. They obtained an independent set of peer reviews for a sample of proposals submitted to the U.S. National Science Foundation and found that one in four of those which were funded would have been rejected by the second set of referees and vice versa. The journal Certified Accountant has a somewhat ambiguous title, unlike The Journal of Irreproducible Results. Many of our readers may not be familiar with The Skeptical Inquirer, the journal of the Committee for the Scientific Investigation of Claims of the Paranormal. It is thoroughly recommended for the sceptical and humorous tone in which it reports on such items as the Squamish Bigfoot hoax and creationist cosmology. The Spring 1980 issue includes an account of a travelling antipseudoscience lecture act by 'Captain Ray of Light' (Professor Stalker of the University of Delaware). Stalker found that serious critiques of pseudoscience made no impact on students so he embarked on a programme of comical debunking which has, it seems, proved to be much more effective.

Who can claim the record of being the most durable don? According to the Guinness Book of Records it is Dr. Routh (1755-1854) who was a Fellow and then President of Magdalen College, Oxford, for a period of 79 years. Alas, in these days of retrenchment and early retirement none of us can have any prospect of matching that. The record for the youngest undergraduate is held by William Thompson (1824-1907), later Lord Kelvin, who enrolled in the University of Glasgow aged ten years and four months. It seems highly unlikely that in these days of increasingly mature aged enrolments his record will ever seriously be challenged either.

The Australian Association of Adult Education Inc

A national, broadly based and independent organisation concerned with the development of Adult Education in Australia

AIMS

(a) To encourage interest in and support for the further development of adult education.

(b) To promote understanding of and co-operation in adult education.

(c) To provide and undertake services in adult education in ways appropriate to a national organisation and in fields where only national action can be effective.

(d) To serve as a centre of information in regard to all aspects of adult education and to maintain a central library on adult education.

(e) To encourage inquiry, research, experiment and publication in the field of adult education.

(f) To convene national conferences in adult education and initiate or assist with such regional activities in adult education and regional meetings of members as the Executive may from time to time decide upon or approve.

(g) To develop and maintain relations with other national or international organisations.

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- raising the community awareness of adult education in Australia;
- conduct and encouragement of research;
- development of policies for presentation to Governments and Commissions;
- seeking increased resources for adult education.

MEMBER SERVICES:
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- Journal/Newsletter and other publications;
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NOTES FOR CONTRIBUTORS

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